VOLUME XXV NUMBER 4

THE AGRICULTURAL STUDENT

OHIO STATE UNIVERSITY, COLUMBUS, OHIO

DECEMBER 1918

CONTRIBUTORS

FRANK H. BALLOU
ALFRED C. HOTTES
M. C. THOMAS
FRANK P. GRAVES
CHARLES B. WING
G. KERR FULTON, '19
E. W. MENDENHALL
ALBERT T. HAAG, JR., '20
JOSEPHINE K. BURNETT, '19
VERNO M. DETRICK, '19
THOMAS E. BERRY, '18

15c PER COPY $1.00 PER YEAR

The Spirit of the Red Cross Should Enter Every Home

THROUGH the Red Cross all the love of kindred and country, which gives our National soul its greatness, finds expression.

Those who love America, believe in humanity, and have faith in God, must count themselves proud to answer "present" at the Red Cross Christmas Roll Call, December 16th to 23rd, during which period the privilege of membership is to be extended to every loyal American.

Let us grasp this opportunity to make this a Red Cross Christmas.

Let us be able to tell our boys at the front, when we send them our Christmas greetings, that America stands solidly behind the Red Cross—*their Red Cross*—with full membership in every home.

Let us tell them that this beautiful spirit of love, and compassion, and generosity, and unselfish service, has entered every home in our land—from the smallest farm in Maine to the largest ranch in California.

No other message we can send will give them greater courage or encouragement. They know what the Red Cross means to them.

Join the Red Cross

All you need is a heart and a dollar

Contributed through Division of Advertising

U. S. Gov't Comm. on Public Information

This space contributed for the Winning of the War by

THE AGRICULTURAL STUDENT

Wear Your Button

Fly Your Flag

Now is the time

to renew your subscription to
The Agricultural Student
for the coming year.

Cut out the following form and mail to the Business Manager, College of Agriculture enclosing your subscription:

THE AGRICULTURAL STUDENT,
Columbus, Ohio.

Dear Sirs:—Enclosed find one dollar ($1.00) for which please send me The Agricultural Student for one year beginning with the January, 1919, issue.

Signed .....

Address .....

CONTENTS

The Christmas Crown

By Dr. Frank Crane

(The noted writer of terse truths, Dr. Frank Crane, wrote the following worthy companion of Rudyard Kipling's "If." You may need to read it again and again; you will want it in your scrap book. It first appeared in Pictorial Review.)

YOU that are unbeautiful, yet rejoice in another's beauty;

You that are ignorant, yet pleased to mingle with the wise, admiring them frankly;

You that are lame, yet love to look upon the shapely limbs of the strong;

You that are old, yet are made happy by the presence of youth;

You that have failed, yet cheer them that succeed;

You that are sickly in body, yet like to see around you the well and vigorous;

You that drew a blank in the lottery, yet laugh, from the heart out, at the luck of the one who drew the prize;

You that pick scraps from the gutter, yet enjoy looking thru the Christmas window at the turtled feast;

You that are unrecognized, unhonored, and yet applaud the famous;

You that sweat and labor, yet smile to see the luxury of the idle;

You that are sinful, yet are touched with the beauty and peace of the good;

You that are soiled, yet love the pure;

You that are awkward, yet sincerely have pleasure in the deft;

You that are commonplace, yet adore genius;

You that are poor, yet have no envy toward the rich;

You that, penniless and obscure, can walk thru the terraced gardens of the prince, look at the palace yacht of the millionaire, note the blazing diamonds on the duchess' neck, listen to the master music you can appreciate but could never have composed, stand on the sidewalk among the crowd and without a twinge of bitterness see the conquering hero go by;

You that have no lover, and can feel genuine pleasure to see the love-light glow in human eyes, between two others;

You childless that take comfort in the house where there are many children;

And you—Oh, not you who stand crowned triumphant on the battlements of heaven—but you who were lost and sent away forever to the abodes of darkness, and yet who have that divinely human something within your sinful hearts that can unfeignedly share the bliss of the shining ones you see afar off;

To you I give the Christmas Crown;

To you I give the sweet prize, the white stone, with a name written thereon that no man can read save him that hath it and him that gave;

For yours is the unseen grandeur; yours is that which is better than success;

You that are clean of envy; to whom another's prize brings no thorn of hate;

You that can sympathize with joy; which is rarer than to sympathize with sorrow;

For your cleanness from envy is better than virtue;

Your power to enter into another's reward, that can never be your own, is stronger than strength, more beautiful than beauty, more victorious than victory;

And if so be the Master, by the fearful laws of heaven, may not approve you openly, yet will he come to you in secret, by night, and kiss you.

Yours is the Secret Prize! Yours is the Christmas Crown! Yours the trembling Morning Star!

The Agricultural Student

VOL. XXV. OHIO STATE UNIVERSITY, COLUMBUS, OHIO, DECEMBER, 1918 No. 4

ORCHARD FERTILIZATION EXPERIMENTS

By Frank H. Ballou

(Mr. Ballou is a member of the staff of the Ohio Experiment Station and is located at Newark, Ohio. The remarks by Mr. Ballou upon orchard fertilizers are especially valuable because it is to him more than any other man that credit is due for reviving interest in fruit growing in the southern part of the State.)

IN the Ohio Experiment Station's apple orchard rejuvenation work in the hilly areas of the southeastern quarter of the state, the initial effort was to determine the part that effective control of fungous diseases and insect pests might have in restoration of the formerly extensive but, in later years, practically lost industry of apple production. This reclamation service had been in progress but a short period when it was discovered that there were many orchards in that region which were really promising in appearance but which were merely existing on soil so deficient in plant food as to render even the most careful and generous spraying of little or no avail so far as increasing fruit production was concerned.

These earlier orchard experiments, it may be well to explain, were conducted on untilled areas sparsely covered with a mixture of native weeds and poverty grass among which, here and there might be found by careful inspection a few scattering, poorly nourished little plants of the better grasses such as timothy, redtop, bluegrass and June grass, and an occasional puny, starving specimen of red or white clover. Just such conditions, indeed, as close and careful examination will reveal on thousands of poor, thin-soiled hillslopes and crests throughout the southern half of Ohio, and in other similar regions.

The apple trees, under these extreme conditions of soil poverty were making little or no growth—merely leafing out each spring and forming new buds for the succeeding season. Consequently such trees were conspicuously dwarfed, stiff and scraggy in habit. The foliage was small, scant, of a pale, unhealthy color, and dropped from the trees early in autumn. Occasionally blossoms would appear more or less profusely in season; but the lack of vitality of the trees usually rendered the setting of fruit a function beyond their strength. The flowers withered and dropped—the embryo fruits with them.

Pruning, under existing conditions, in connection with spraying, while materially improving the appearance of the trees, of course, exerted little if any effect in promotion of fruit production. Mulching around and beneath the trees with straw was tried but on account of the thin, hard, compact, humusless soil conditions found on the rain-washed, sun-scorched, wind-swept hillslopes, the hoped-for beneficial effects of such a mulch were very tardy in appearing.

EFFECT OF VARIOUS FERTILIZERS OBSERVED

However, experiments with various forms, quantities and combinations of

commercial elements of plant food early were planned and set in operation. Nitrate of soda, acid prosphate and muriate of potash as sources, respectively, of nitrogen, phosphorus and potassium, were the substances more generally utilized in these tests. Tankage and bone meal as sources, likewise, of nitrogen and phosphorus, were employed in a small way in comparison. Stable manure (very scarce and difficult to transport in the rugged section were used separately or in combination. All of these elements used together in admixture composed a *complete fertilizer* totaling in weight 12½ pounds per tree.

The concentrated fertilizers separately and in different quantities and combinations, were scattered or "sown" by hand under the outer extremities of the branches of the trees, over circular areas or "belts" of ground slightly greater in diameter than the spread of

Orchard in southeastern Ohio in which a five-year fertilization test was carried out

in which the experiments were located), was used in the form of a liberal mulch under the outer spread of branches of the trees in order that its effects might be observed also in a comparative way.

The *standard formula* of commercial plant food, adopted at the beginning and continued thruout the series of years' experiments, was 5-5-2½ pounds per tree, respectively, of nitrate of soda, acid phosphate and muriate of potash —no matter whether these materials the branches—the heavier proportion of this application being so distributed as to fall at the outer circumferences of the circles thus formed. No fertilizer was applied immediately about the bases of the trees, as the more important areas of ground occupied by the feeding-root systems of such trees usually correspond closely with the overhanging spread of their branches. In a number of experiments the plant food was applied over the entire *squares* of

ground occupied by individual trees, with the usual exception of small, circular spaces about their bases.

The time of application of the fertilizers, during the first two of the series of years in which the experimental plots were under observation, was early in May of each year, or just about the time the petals of the blossoms were dropping. But it soon was discovered that application at the close of the period of bloom, while exerting a wonderfully beneficial effect on the succeeding year's production of fruit, was too late for material benefit to the current season's crop. This delinquency, obviously, was of more consequence during the initial season of the orchard improvement work than in seasons following; but, nevertheless, an earlier date of application was adopted, namely, the period in which the well expanded fruit buds are exhibiting signs of bursting into bloom—usually in April in the latitude of the southern half of Ohio.

APPLICATION OF NITRATE OF SODA SHOWS REMARKABLE RESULTS

The first noticeable effects of fertilization in these starving orchards were discovered within two weeks from the date of application, where the quickly soluble, peculiarly penetrating, promptly available nitrate of soda (nitrogen) had been applied around the trees, either alone or in admixture with the other forms of plant food. Dark green circles or "belts" around the trees, caused by the thin, mixed growth of weeds and grasses which covered the ground taking on a much deeper, richer shade of color, were distinctly outlined. These surprisingly darkened, circular areas produced the effect, in general, of dense shadows cast on the ground by the trees, but were

Two rows apple trees, same variety and age. Row on left, fertilized with 5 lbs. nitrate of soda and 5 lbs. acid phosphate, produced 184 barrels fruit in a 6-years' test. Row on right, unfertilized, produced 66 barrels.

strikingly greater in diameter than were possible to be cast by the lesser-diametered, thin-foliaged tree-tops. However, almost at the same time, the leaves of the trees began to change from their sickly light or yellowish green color to a deeper, darker, healthier hue. A little later, new leaves of extremely large size and good color, and healthy, vigorous new shoots, began to push out prolifically from the terminals of long stunted branches, twigs and spurs. These changes were remarkably noticeable within a month, as the fertilized rows or plots were compared with those left unfertilized for comparison.

Ohio grown Rome Beauties

The plots fertilized with acid phosphate and muriate of potash applied either separately or in combination, did not show any improvement in color or growth of foliage of the trees, or of the soil covering of vegetation beneath and about the trees, as compared with the check plots. Indeed neither in the earlier stages of the plot experiments, nor later during the entire period of five years, did the annual application of phosphorus or potassium, or both, exert any effect that was visible to the eye so far as growth and appearance of the trees and production of fruit were concerned. Only on the vegetation (soil covering) of the orchard area was there any observable beneficial influence of either of these elements. This influence briefly will be mentioned farther on.

Tankage and bone applied both at the rates of 5-5 and 10-10 pounds per tree per year, while eventually exerting beneficial effects especially of the vegetation of the orchard areas, proved to be entirely too slow in availability as surface applications about apple trees cared for by the grass-mulch method. Stable manure likewise was discouragingly tardy in its action under the extremely poor soil conditions, requiring from three to five years to accomplish the stimulative effect that nitrate of soda brought about in one year.

NITROGEN NECESSARY FOR ORCHARDS

The experiments promptly and clearly demonstrated that the thin, poor soils of the hilly areas of Ohio were far more seriously deficient in nitrogen than in any of the other elements necessary not only to *growth and vigor* of apple trees, but to *fruitfulness* as well. Even in newly begun tests where this quickly available plant food was applied as early as mid-April to starving orchards, there was a fairly uniform, moderate showing of blossoms thruout and a proportionately moderate setting of healthy, growing young apples developed, while on the untreated plots the blossoms, as usual, generally withered and dropped without setting fruit.

Without attempting to enter into time and space-consuming details concerning results of these fertilizer tests in different cooperative experiments with various orchard owners, as the work progressed from year to year, the

writer is pleased to submit a summary which will enable the reader to do his own figuring as to whether the application of nitrate of soda pays where soil conditions are similar to those generally prevailing in the upland areas of eastern and southern Ohio. The figures given show actual *net gains* in *bushels* and *dollars*. Hence it is not necessary to discuss the question of "will it pay to use nitrate at its present high price?" Rather is the data available

Apple harvest in an orchard in southeastern Ohio

that will enable anyone to compute for himself how much the owners of such orchards can afford to pay per pound or ton for nitrate and make a profit on his investment. The question at present, indeed, seems not so much to be "how much am I justified in paying for nitrogen?" but "where and how, under wartime conditions, can I procure it?" Better days are coming, however, for—LISTEN!

Strangely and happily occurring at the very moment these lines are being written and this article nearing completion (at 6:30 o'clock A. M., November 11, 1918), the whistles are blowing, bells ringing, guns firing and a wild pandemonium of noise filling our country at the definite announcement and in celebration of "*The Quitting of the Hun.*" Why is not the writer, as a patriotic American, out with the crowd —do you ask? Well, already he has been out three and one-quarter hours, or since 3:00 A. M.!

We know we shall be pardoned this unplanned diversion from our subject. But, after all, the great and thrilling news now snapping from the wires on this glorious morning, is not without its bearing on future production of big red and golden apples and lots of them: for it means less munitions of war and more nitrate for agricultural uses in the not far distant future. Hence we have paused to indulge in this exultant paragraph or two.

Experimental plots on which nitrate of soda, 5 pounds per tree or 200 pounds per acre per year, was applied,

returned an average cash gain per acre per year of $125.75. This represents an average gain per tree per year of a little over $3.14. Nitrate of soda during the period of five years in which these tests were conducted in three separate orchards, cost an average of three cents per pound or $60 per ton. The price of nitrate in more recent years has been much higher; but even at double the price paid during the period of experimentation, or $120 per ton, on the basis of results obtained, the average gain would not have been seriously reduced, viz., to an average per year of $119.75 per acre or a mere fraction under $3 per tree, counting 40 trees to the acre.

In two of these orchards tankage and bone were used as sources of nitrogen and phosphorus, at the rate of 5 pounds of each per tree or 200 pounds per acre per year, applied as surface dressings about and beneath the trees. This treatment, during the five year period, returned an average gain per year of only $13.75 per acre or slightly less than $0.35 per tree.

Likewise in two of the orchards was used fresh strawy stable manure applied annually in the form of a mulch over circular areas of ground under the spread of branches of the trees (300 to 500 pounds per tree). These manured plots, compared, as were the former two sets of plots, with unfertilized or "check" rows, returned an average gain per year of $65.75 per acre or $1.64 per tree. In one of these two tests manure, after the third season, gave equally as good results as nitrate of soda; but in the other orchard, during the period of five years, the trees failed to respond generously to this treatment.

It is a matter of regret that, at the beginning of this five year period of orchard fertilization experiments, the newer source of nitrogen—sulphate of ammonia—had not yet been recommended or offered to the trade as a substitute for nitrate of soda. Had a comparison of the two sources of nitrogen been made during the five year test of nitrate, the results would be peculiarly interesting at this time. Sulphate of ammonia, it may be stated, seems promising as a substitute for nitrate in orchard fertilization. But further and extended tests as to its efficiency and safety should be made.

SOME INTERESTING FIGURES

In a separate orchard of somewhat larger trees of a different variety of apples, fertilizer experiments embracing a number of combinations of the various commercial plant foods, and covering a period of six years, developed the following interesting data:

Trees fertilized with 2½ pounds nitrate of soda and 5 pounds acid phosphate per tree per year, applied about the trees on a circular mulch of straw (not counting the cost of the straw), produced an average gain per year of $103 per acre or $2.45 per tree.

Trees fertilized with 5 pounds each of nitrate of soda and acid phosphate per tree per year, applied about the trees over a mulch of straw (not including cost of straw), gave an average gain per year of $171.25 per acre, or slightly above $4.07 per tree.

Trees fertilized with 10 pounds each of nitrate of soda and acid phosphate applied annually evenly over the entire tree-squares of ground, returned an average gain per year of $174.00 per acree or slightly in excess of $4.14 per tree. There was also, in addition, an average gain per acre per year of 1886 pounds, sun-dry weight, of *mixed timothy, redtop and bluegrass* annually clipped and permitted to lie over

the surface of the ground as a mulch, as compared with the production of mixed weeds and poverty grass on the unfertilized plots. This vegetative development, as in various other similar tests, was attained *without sowing grass seed of any kind.*

The trees fertilized with 10 pounds each of tankage and bone per tree per year, applied over the entire tree-

Edge of an orchard experiment plot fertilized with acid phosphate. Fore ground shows the untreated plot

squares of ground, gave an average gain per year of $66.75 per acre, or $1.58 per tree. In addition there was an average gain per acre per year of 1632 pounds (sun-dry weight) of fine white and red clover and bluegrass, and a sprinkling of timothy and redtop, as compared with the almost worthless wild growth of weeds and poverty grass on the unfertilized areas. No seeding was done.

The trees fertilized with 10 pounds per tree per year of acid phosphate alone, applied evenly over the entire tree-squares, produced an average gain per year of $64.75 per acre, or $1.54 per tree. There was also an average gain per acre per year of 1260 pounds (sun-dry weight) of white and red clover, some weeds and a sprinkling of timothy and other grasses, as compared with the unfertilized ground. No seed was sown.

Concerning the matter of application of the fertilizing elements evenly over the entire tree-squares of ground for the benefit not only of the trees and fruit, but of the vegetative covering of the orchard soil, it may be stated that the use of nitrate of soda alone especially encourages *the better grasses* such as timothy, redtop, bluegrass and June grass, which, without seeding, almost always get a start after which they rapidly thicken, grow and take possession of the orchard areas to the practical exclusion, usually, of the comparatively worthless weeds, grasses and sedges which nature, fortunately, has provided shall clothe thin, poor soils that have been rendered so by unwise tillage and over-cropping, and erosion.

On the other hand, where acid phosphate or ground bone is liberally applied each season to the same plots, *white or red clover, or both*, almost invariably comes in freely and vigorously, if somewhat slowly, without seeding. But there will be less benefit to the *grasses* from these sources of phosphorus—especially from acid phosphate.

Where nitrate of soda and acid phosphate are liberally applied in admixture, a combined growth of *grasses and clovers* is almost certain to develop sooner or later as a voluntary soil covering and source of mulch. However, in such a combination of concentrated plant foods, where nitrate of soda is used in too heavy proportions—above 200 pounds per acre it has seemed apparent—the *grasses* are likely to develop so much more promptly and rapidly that the *clovers* are, by crowding, more or less completely eliminated from the partnership.

When these phenomena were first noted and studied in connection with orchard fertilization it was hoped that, by regular and liberal use of acid phosphate or ground bones, or both, clover might be so encouraged as to occupy the ground of the orchard areas quite a part of the time and, by its peculiar power of extracting nitrogen from the soil-air and fixing it in its root nodules for future availability to the trees, that the most expensive of all fertilizing elements—nitrogen—might be rendered less and less necessary to purchase. However, at least, in the faithful maintenance of orchards cared for by the grass-mulch method of culture, there seems to be little real encouragement to hope that our orchardists may in the future "buy their nitrogen in acid phosphate bags."

FARMS FOR SOLDIERS

By The Editor

(The Agricultural Student is indebted to Hon. Franklin K. Lane, Secretary of the Interior, and Jos. J. Cotton, his Administrative Assistant, for this official statement. When one realizes that there is an area of irrigable cut-over and swamp land equal to a tract seven times as large as Ohio, the importance of considering this project is readily recognized. We trust this discussion may clear up some of the many questions.)

FOUR million men will return from France; they will want jobs. The normal activities of life during peace will absorb many of these men, better trained and disciplined than they have ever been before. There are over 200,000,000 acres of unproductive land in the United States, some of which may be reclaimed.

It is with this in mind that Secretary Lane wrote President Wilson on the thirty-first day of May. The Secretary estimates that 15,000,000 acres may be made productive by irrigation, all of this land being at the present time in the hands of the government. In addition to this, 3,000,000 acres are now being brought under the possibilities of cultivation by irrigation projects. The above does not take into consideration the vast acreage of undeveloped swamp lands which lie in Florida, the Mississippi delta, Indiana, Michigan, Minnesota, Wisconsin or California.

HOW THE PLAN WORKS

"A plan of land development, whereby land is developed in large areas, subdivided into individual farms, then sold to actual bona fide farmers on a long-time payment basis, has been in force not only in the United States under the reclamation act, but also in many other countries for several years," so writes Secretary Lane to President Wilson.

"And let it be understood at the outset that the plan does not contemplate charity. The men who want work and the men who want homes will be given the opportunity, at a fair wage and under the supervision of the Government, to build dams and canals, to blow stumps and clear brush, to construct drainage ditches. Then will come the work of leveling and breaking the land, of building houses and barns, of erecting fences, constructing roads, and performing all the necessary work of making the site of a future community a suitable place in which to live. And while these men are bringing about this transformation, they are being paid by the Government and at the same time earning an equity in their future homes, to be paid for in long-time payments covering a period of 30 to 40 years."

WHERE THE PLAN WORKS

"In Denmark, Ireland, New Zealand and the Australian commonwealth it has changed the land situation. One of the new features of this plan is that holders are aided in improving and cultivating the farm. In a word, there is organized community development."

The Canadian commission appointed to investigate the conditions in New Zealand report this:

"The farmers have built better houses or remodeled their old ones; brought a larger acreage of land under cultivation that would otherwise be lying idle; have bought and kept better livestock; have bought and urged more labor-saving machinery, on the farms and in the houses. * * * They keep more sheep and pigs and have so largely increased the revenue from their farms that they are able to meet the payments on the mortgages and adopt a higher standard of living, and a bet-

ter one. Thruout the country a higher and better civilization is gradually being evolved; the young men and women who are growing up are happy and contented to remain at home on the farm and find ample time and opportunity for recreation and entertainment of a kind more wholesome and elevating than can be obtained in the cities."

The United States has a frontier today in Alaska with its unexplored agricultural resources. To some persons this will be a most attractive field and a "national opportunity."

WHAT CANADA PROPOSES DOING

A plan is being perfected by the Canadian Pacific Railway Company to settle the soldiers on "ready-made" farms, cleared, fenced, with a house and barn built and farm machinery furnished. According to the "Newspaper Enterprise" the plan contemplates the establishment of "a community or colony, land being specially selected for the purpose. There are three such colonies already laid out, one of which contains fifty farms and the other two twenty-five each—sufficient numbers to insure social, school and church facilities for the families living in them. In two of the colonies the land is irrigable, and the farm units are of 80 acres each; the other one is on non-irrigable land, with farm units of 160 acres each.

The three colonies are located in southern Alberta, and are all within easy distance of the railway Each colony has a central farm, under a competent agriculturist, where advice and assistance is available for the occupants of the farms. This also serves as a demonstration farm and social center. The colony superintendent has at his disposal additional machinery to lend to the farmers in the colonies as required, at a fixed charge per day.

No payment is required from soldiers taking up these farms until the end of the third year of occupation, and during this period their operations are carried on with the advice and approval of the colony superintendent.

In these three years the occupant of a farm is a tenant at will. At the expiration of this period he is required to pay rental equal to 6 percent per annum on the cost of the permanent improvements on the land, as well as any cash advance he may have received from the company.

At this time, if his tenancy has been satisfactory, a contract is entered into for the purchase of the land, and at the end of the fourth year, five percent of the total purchase price, together with interest at 6 percent for the year becomes due."

THE QUETIONS INVOLVED

Secretary Lane continues, "This is our immediate duty. We should know not merely how much arid land can be irrigated nor how much swamp land reclaimed, nor where the grazing land is and how many cattle it will support, nor how much cut-over land can be cleared, but we should know with definiteness where it is practical to begin new irrigation projects, what the character of the land is, what the nature of the improvements needed will be, and what the cost will be. We should know also, not in a general way but with particularity, what definite areas of swamp land may be reclaimed, how they can be drained, what the cost of the drainage will be, and what crops they will raise. We should have in mind specific areas of grazing lands, with a knowledge of the cattle which are best adapted to them and the practicability of supporting a family upon them. So, too, with our cut-over lands. We should know what it would cost to pull or blow out

stumps and to put the lands into condition for a farm home.

The work that is to be done, other than the planning, should be done by the soldier himself. The dam or the irrigation project should be built by him, the canals, the ditches, the breaking of the land and the building of the houses should, under proper direction, be his occupation. He should be allowed to make his own home, cared for while he is doing it, and given an interest in the land for which he can pay thru a long period of years, perhaps thirty or forty years. This same policy can be carried out as to the other classes of land, so that the soldier on his return would have an opportunity to make a home for himself, to build a home with money which we would advance and which he would repay, and for the repayment we would have an abundant security. The farms should not be turned over as the prairies were —unbroken, unfenced, without accommodations for men or animals. There should be prepared homes, all of which can be constructed by the men themselves, and paid for by them under a system of simple devising by which modern methods of finance will be applied to their needs

THE PLAN OF ORGANIZATION

The United States has been considered in three divisions: (1) The so-called semi-arid region, comprising seventeen arid and semi-arid states; (2) the northeastern section of the country, lying east of the ninety-eighth meridian and north of the Ohio river, comprising a large area of cut-over timber and some swamp land; (3) the south-eastern section, which comprises the bulk of the swamp and cut-over timber land.

"With the country as a whole practically united in support of the proposition, there is every hope that when the data now being assembled by the new organization, covering the location, acquisition, and reclamation of these 300,000 square miles of unproductive land, have been digested and presented to Congress, funds will unhesitatingly be made available to enable the Interior Department, thru the Reclamation Service, to bring the fighting man and the land together, and turn America's "No Man's Land" into another Garden of Eden.

So much for this phase of the problem, but how will the various states feel about having their young heroes invited to settle away from home? I hope at an early date to have a conference with Governors and other officials of all the states to find out what resources in unused lands each state has, and what cooperation for soldier settlement may be expected from each state.

With this information Congress may the better enact legislation to cover the whole field of soldier settlements on farms."

WHAT DO OUR SENATORS THINK OF THIS?

Regarding this plan a few comments by our Ohio Senators are of interest. In a letter to Secretary Lane, Senator Harding writes, "I have given this problem some earnest consideration, and shall be more than delighted if I can in any way contribute to helpful accomplishment in that direction." Senator Pomerene writes, "I shall look forward with a very lively interest to any legislation which may be proposed along the line of your suggestions."

THE OTHER SIDE

Certain writers are emphasizing the unfairness to the present farmers who have not been given the help which the soldiers will receive. Thoughtful criti-

cism comes from *Wallace's Farmer*. In an editorial they write,

"The idea sounds fine, and doubtless will appeal to thousands of soldiers. Those who are really interested, however, will do well to study the various government reclamation projects. For some reason the people on these projects seem to have had difficulty in making both ends meet. After they learned the technique of farming under strange conditions, there was the problem of disposing of what stuff they raised at a profitable price. And before this was solved, they were generally in a position to call on the Government for financial aid. Our criticism is that many of the men who put thru the big irrigation projects, government and otherwise, have been engineers rather than agricultural economists. They have thought in terms of applying the water to the land rather than in terms of growing crops at a profit. It is our impression that on the whole the drained lands have done rather better than the irrigated lands, because they are generally nearer to satisfactory markets.

Our idealists must not be trusted to work out the soldier-land policy in company with some engineers. The farm management man and the agricultural economist must also have a voice in the matter. Personally, we give it our superficial judgment that it will be no great kindness to the returning soldiers to settle them in very large numbers on reclaimed swamp, irrigated or cut-over land. Nevertheless, if the Government does not fix up for the soldiers, there will be no real estate concerns that will. We believe that the Government can do some real good in supervising such private concerns, with a vigilant eye to see that the soldiers do not pay too high a price for low-priced or possibly worthless land."

THE COUNTY AGENT—A PHYSICIAN AND EFFICIENCY EXPERT OF AGRICULTURE

By M. C. THOMAS

(Mr. Thomas is the County Agent of Marion County. What he has saved the farmers of his county in cold cash and how he has inspired the men in his community to do things, is worthy of reading Some men earn their salaries. The Chinese doctors are paid to keep people well, their pay stops when the patients become ill. So it is with the County Agent.)

I REMEMBER some fifteen or eighteen years ago reading a magazine article by one of our noted writers describing, at that time, the trend of agricultural conditions. The one thing that attracted my attention above all else was where the author said that the time would come when all agricultural centers would have an agricultural doctor to whom the farmers could go with their problems, and he in turn would diagnose the trouble, then prescribe the remedy. At that time I thought the story was a little far-fetched, but as time went on, I saw the prediction coming true, and when the county agent movement struck Ohio, and I was asked to take charge of a county, the thing that came into my mind was, "How would a county agent devote all of his time thruout the entire year to the work in a single county?" But after having been in the work almost five years, in two counties, the question is, how to get enough time to do all the work that is to be done.

I find that there are some things that are absolutely necessary to make the county agent's work a success. One that I wish to especially emphasize is that there be a good, live, strong farmers' organization back of the county agent; if not, his work will be an uphill job. When I started work in Miami County, I had no farm bureau or farmers' organization with which to consult, but was placed there to be their county agent. I soon found that if we were

The lime distributor can be used to advantage to distribute acid phosphate when more than 400 lbs. is used to the acre

to accomplish the most good for the county, it would be necessary to have an organization, so we started out with that end in view, and I am glad to say that we had the most hearty cooperation of the farmers. When I left that work, there was an organization of which any county might well be proud.

When I came to Marion County, the conditions were different; the farmers had gotten behind the proposition, had formed an organization, and were ready for the work. When there was anything to be done, we knew where to put our fingers upon men that we could count on, to assist us in carrying a problem to a successful solution.

Soybeans, to be grown with corn, are growing in favor

A YEAR'S WORK

I think it will be well at this juncture to give a brief outline of our activities during the past year. Along the line of soil work, our endeavors have been centered upon the problem of a rational, permanent soil fertility, basing our work, first, upon thoro drainage, followed by a rotation of crops, the use of all manure possible, supplemented with phosphorus and lime where needed. Practically all of our farmers realized the benefit of tile drainage. However, during the year one practical demonstration was held, mapping out a system of tile drainage; this tract was composed of forty acres.

Farmers everywhere have been urged by word of mouth, pen and practical demonstrations to use phosphorus liberally, and the result is, that during the past year, something like 1600 tons of acid phosphate was handled by our Farm Bureau with splendid results.

INTRODUCING NEEDED CROPS

Special emphasis has been placed upon some of the newer crops, such as soybeans, alfalfa, and rape, along with the growing of some of our old staple crops on a more extensive scale.

The northwest corner of the county

is a black soil lying very level, and the majority of farmers in that section conceived an idea that it was impossible to grow wheat on that type of soil. However, during the past year we had quite a few farmers who tried wheat there. One farmer, Mr. O. P. Shoots, had this year seventy acres on his farm that made better than thirty bushels to the acre, the first wheat he has grown for more than ten years; his success is due to the fact that he had a thoro seedbed prepared, sowed in season and fertilized with acid phosphate.

Soybeans are growing in favor every year with a number of our men, being held in high esteem by our hog feeders, to be grown with corn, when corn is to be hogged-off; also, a few dairymen are growing them for hay.

Alfalfa is gaining in popularity each year, due to the fact that we have a number of demonstrations scattered over the county where it is growing successfully.

During the past year we have put on some eight or ten demonstrations, and in every instance they have been a success. Among the most prominent were those on the farms of W. E. Weston, near Green Camp; H. T. Myers and H. H. Berringer, Waldo Tp.; Denzer Bros., Richland Tp.; and J. H. Brundige, near Waldo.

Much of our time in animal husbandry has been spent in demonstrating ways and means for controlling diseases, figuring out feed rations that are as economical as possible, considering the results. With poultry, our main work has been in poultry club work, having about sixty-five girls in a poultry contest.

BARNS ARE BEING WELL PLANNED

One dwelling and three barns were planned by the Rural Engineering Department of the Ohio State University in conjunction with us; they have since been erected.

EIGHT HUNDRED BUSHELS OF SEED CORN SECURED AND DISTRIBUTED

About five months of the year was devoted to the seed corn situation in our county. Something like 430 bushels were ear-tested at our corn-testing station. This I consider the minor part of the work, the major part being that it gave us a basis on which to work and urge the farmers to test their seed corn. What seemed to be chaos for a time, was worked out with a splendid result, that is, to supplement what we had in our own county, we secured and distributed over 800 bushels of War Emergency Seed Corn.

The "Rag Doll" method is a simple way of testing ear corn

DAIRY MEN ARE ORGANIZED

Practically all of our dairy work is accomplished thru "The Dairymen's

Association," which holds meetings every two weeks, when the various phases of dairying are discussed and advice given as to the best method of procedure.

MARION COUNTY HORTICULTURE NOT SO IMPORTANT

As this is a very poor fruit country no definite line of work was mapped out, all our efforts having been devoted to the answering of specific questions, as to the mixing and application of spraying materials, pruning and other orchard practices.

Numerous calls were received, as to potato blight and aphis, which were quite prevalent during the year and I am glad to report an increasing tendency on the part of our people to take care of these troubles in their incipiency.

HOW THE COUNTY AGENT MAY SAVE MONEY FOR THE FARMERS

During the year the Farm Bureau purchased 200 cars of corn, outside of the county, to feed livestock; 49,000 pounds of binder twine, 40 cars of coal, 3 loads of tankage, and 1600 tons of acid phosphate.

The 160,000 bushels of corn was delivered to members at a saving of 15 cents per bushel, or a total saving of $2400; binder twine at 3 cents per pound or $1470.00; the fertilizer at a saving of $1.00 per ton; 40 cars of coal at $1.00 per ton and tankage at a saving of $1.50 per ton, or a total business of $310,580.00 with a saving of $6,935.00 to the farmers.

During the year we received 6048 callers at the office; held 117 meetings, having an attendance of 7709; and traveled 2839 miles by rail, and 6819 miles by automobile. We made 200 farm visits, and sent out 3250 letters and 914 circulars.

KEEP HOME-GROWN POTATOES FOR SEED

To avert a seed-potato crisis next spring, specialists at the Ohio Experiment Station are advising farmers and potato growers to use for table purposes the tubers now coming into Ohio markets from other states, rather than to consume the home-grown supply which generally is more valuable for seed. Potatoes shipped from other sections are often unsatisfactory for seed, as they may contain diseases which would require several years to eradicate. The culinary qualities, however, are equal to the home-grown potatoes.

Growers who have developed good, high-yielding strains of potatoes are also advised to hold a larger supply of the potatoes for seed than usual as the crop in many sections has been a failure. The demand for seed potatoes of high quality, it is pointed out, is growing greater each season and an effort is being made to keep potatoes fit for seed out of the ordinary commercial channels.

During the past fall work was started to certify potato growers as producers of high-quality seed, the basis for certification being fields found to be free from diseases, such as curly leaf, leaf roll, mosaic, scab and rhizoctonia. By this means in a few years it is probable that enough certified seed will be produced in Ohio to supply the demand for high quality strains.

ORCHARDS AND MICE

Neglecting to clean up the rubbish beneath your orchard trees may mean a lot to you. Mice enjoy your neglect. The young trees need some sort of protection, such as woven wire guards. If the soil is cleared and the soil compacted about the trees you may rest easier, and not dread to look at your girdled trees next spring.

HOW TO MAKE A GOOD SPEECH

By FRANK P. GRAVES

(Dr. Frank P. Graves is Dean of the School of Education of the University of Pennsylvania and a former professor of Ohio State. Before the Farmer's Institute Normal Convention in Columbus, October 10, Dr. Graves gave two very interesting talks on how to deliver an interesting and instructive speech. We shall print them in full. Everyone is called upon to make a few remarks occasionally; these papers will help you.)

PRESENTATION AND DELIVERY

BACK in the remote ages, when the Morrill Act occasionally served purposes *immoral* and creating strange were incubated by the *Hatch* Act, I became the president of an agricultural college and director of an experiment station. These honors came to me not because I knew anything about the subjects involved, but because it was necessary for me to receive some salary as head of a little state university in the Rocky Mountains, and Uncle Sam's funds constituted the major part of our assets. Up to that time I had been city-bred and a teacher of Classics. I was better acquainted with flats than with farms, with milkmen than with cows, with Greek root than with rutabaga, with Latin than with lentils, and with philology than with poultry. Unlike many others "that had entered not by the door into the fold, but climbed up some other way," I did honestly try, tho with slight success, to learn something about my job, and I have, in consequence, ever since had the most profound respect for Agriculture, the oldest, most important, and most widely circulated of sciences and occupations, and even more for those that really understand and teach the subject. It has been well said by our greatest American orator: "When tillage begins, other arts follow. The farmers, therefore, are the founders of civilization."

I come to you then, not as an expert, but as a sympathetic friend—one who realizes only vaguely what you are doing, but is most anxious to assist to the limit of his puny strength. My presence and message, moreover, may be somewhat justified by a species of sentimental propriety. For it may be considered rather fitting that, as a representative of the old University of Pennsylvania, where Agriculture was taught nearly two centuries ago, for the first time in America, I should be speaking on agricultural education to an audience at Ohio State University, where six of the happiest years of my own academic life were spent. I have been asked to talk to you on the organization and presentation of subject matter by instructors at agricultural institutes. And I am proud to undertake this, inadequately as I may perform the task, for the work of the farmers' institutes has now come to be the most effective of all in agricultural education. In Ohio alone the annual attendances at farmers' institutes has become not far from half a million, and even then not all the communities that desire this instruction can be accommodated. So popular and successful have these institutes proved that it seems almost like "carrying coals to Newcastle" for any outside teacher to attempt to teach such teachers how to teach.

THE SPOKEN WORD

The instruction at these institutes is necessarily by word of mouth. It might seem strange that in these days of newspapers, journals, popular magazines, and cheap books that oratory and spoken messages should any longer be needed, especially now that most people

flatter themselves that they perceive with their heads, rather than with their hearts, and are governed by reason, rather than emotion But emotional appeals will never altogether yield to cold logic in accomplishment, and the spoken word will always have a place and a power that are peculiarly its own. The poisonous gases, "big Berthas," and machine-guns may reach further and do more immediate execution, but they tell me that on the Western front today there are still times when the good old revolver, army knife, or trench club proves a rather effective weapon. So oratory has in its place an effect that cannot be attained by anything in print, tho the latter may affect more people. There is something almost hypnotic about the spoken word. It impresses and carries conviction to a group of people in a way that no book or bulletin can hope to do. It seems to grow out of the very life and experience of the speaker, to be wrung from his inmost self, and the weight and power of conviction of his message are at least trebled thereby.

SPEAK EXTEMPORANEOUSLY

For this reason it is obvious that a farmers' institute instructor should first of all learn to speak extemporaneously, and never commit the fatal error of using a manuscript. One of the greatest pedagogical sins ever committed, in my opinion, was the introduction of the written lecture into colleges. This procedure is the very easiest in the world for the instructor; once written out, it never has to be thought of again, except to make minor changes, but it is the very worst method possible for immature minds. It takes account of only one side of the teaching process, the teacher's, and leaves the pupil almost entirely out of account. Now if this is true of the ordinary classroom, how much more obviously does it obtain of that larger and more independent group at the farmers' institute, who are under absolutely no compulsion to listen to an instructor if he does not "deliver the goods" to their satisfaction! If you wish to hold the sympathy of your hearers, you must look at them, not at a dead manuscript. In a certain sense, they make your speech for you, and this they cannot do when you will not read the messages written upon their faces, because your eyes are otherwise employed.

Of course one gains an appearance of dignity by reading a carefully prepared address from a manuscript, but he will seldom reach or impress his audience long. He will soon lose all except a few trained hearers, and even they will eventually get tired of him. Eugene Field said that the average Missouri audience would rather have a six-shooter pulled on it than a manuscript, and to a certain extent in this matter we are all from the "show-me" state. Various attempts have been made to retain the superior literary form of the written manuscript and yet minimize its disadvantages. This has been partly accomplished by writing in as colloquial style as possible, and reading the material beforehand often enough to familiarize oneself with it, so that one may occasionally see his hearers and get on "speaking terms" with them, as it were. Or the address is sometimes memorized in the attempt to have it appear extemporaneous, without losing its finish. But this usually results in the speaker appearing stiff and unnatural, and the address cannot be easily adapted to unexpected exigencies that are bound to arise. As a rule, we have little difficulty in discovering when a man has memorized his speech, even when he does not hesitate and grow embarrassed by

forgetting part or all of it. Moreover, such a memory "stunt" is a serious waste of time for a man who has any real work to do in life. Hence, while some speakers, like the great platform orator Wendell Phillips, have been marvellously successful in thus concealing art with art, the procedure, upon the whole, is never advisable, and is absolutely out of place in the familiar "give and take" of a farmers' institute. Of course, it is possible to make a further compromise by memorizing the climaxes, telling arguments, illustrations, and other important parts of the address and delivering the rest extemporaneously. This is a little better, and, in the hands of a skilled speaker, like Daniel Webster, has sometimes been used with great effect, but there is still the strain upon an adult memory and it is very difficult, when one reaches the memorized part, to hold to the same easy delivery and speak in the same natural key. Some of you at least will remember the lecturer we used to have occasionally at the First Congregational Church, who would, just before his address, in a most smiling, familiar, and natural way tell us what would be given next time and make other announcements, and then, as he started his lecture, sink his voice, frown, and become serious and stiff all in a twinkling. And have we not all heard others like him?

THE VALUE OF MANUSCRIPT

Evidently anything except extemporaneous presentation will jeopardize one's success upon any occasion and it is certainly fatal at a farmers' institute. If you must display your literary style and your ability to drink from Chaucer's "well of English undefiled," write out the speech in your choicest and most dignified fashion and then turn it over to the newspaper or the editor of the Proceedings of the Institute. Thus you will be credited with a highly literary product when the address is printed, and at the same time you will be able to deliver it extemporaneously with the greatest effect. As Lyman Abbott once stated it: "The best manuscript address is most admired, but the best extemporaneous speech is most effective." Both merits can be easily secured if you are willing to write out your speech for the press, but deliver it extemporaneously.

BE FULL OF YOUR SUBJECT

An English dean, I have heard, once counselled young preachers not to write out their sermons, but to "fill themselves full of their subject, knock out the bung, and let nature caper." This is in line with what has just been said concerning the value of extemporaneous speaking, but it is very bad advice nevertheless. While an offhand address is far more effective than a written one, it is much more difficult and dangerous. It is hard to maintain the stricter self-control that is necessary and not to wander from the point. Unless the extemporaneous speaker has a simple and compact outline of his argument in mind, he is almost sure to be hopelessly muddled and lost. He may be able to finish his speech without absolutely disgracing himself, but he will not have said what he intended, and, except for unusual natural adroitness, or the good luck that seems at times to attend upon drunkards and fools, he will leave behind a very poor impression upon the audience.

When an instructor arises to speak at a farmers' institute it is obvious that he should have fully in his mind a logical outline of his material and should know in general exactly what points he intends to make and just how he is to illustrate them. He should beforehand

have planned a series of points as simple and orderly as possible. The argument must be simple, in order that he may not lose himself and his hearers in some of the blind alleys and purlieus of his mind; the arrangement should be as orderly as possible, so that the points may be easily recalled by a natural succession and put as little tax upon the memory as possible. Where it happens, as it does occasionally, that the points are wholly detached from each other, it is well to make an artificial order, and to hold it in mind by memorizing the most significant word of each thought or even the initial letters of each paragraph. Of course such mnemonic devices are much less satisfactory than the easy memorization that comes from logic, but it is often necessary and will serve as a makeshift.

MOST GOOD SPEECHES ARE MADE, SELDOM BORN

This organization and arrangement of a speech should always be given careful consideration. It usually requires hard thinking and some experimentation to select the object of an address and its central thought, and then group about this skeleton in logical order the various subsidiary ideas that one wishes to develop. In fact, this organizing seems to me the most difficult and crucial part of making a good talk. It requires the best there is in one, a high degree of concentration, and a general heightening of consciousness. This may be obtained in several ways, according to the person. I find that my best inspiration in this direction usually comes by reflection before arising after a sound night's sleep or during or just after a brisk and invigorating walk. Chemical or mechanical means for heightening consciousness sufficiently are also employed by some. Hence the resort during organization and composition of an address to stimulants—tobacco, tea, coffee, whiskey, and drugs—or to elevating the feet, biting the pencil, pulling the mustache, rubbing the forehead, or chewing gum. A mild starvation, so that the blood is not centered in the stomach and can be used for cerebral action, is often of value in this process of selecting and arranging. To use personal experience again, I have found the old mechanical device of writing out one's separate thoughts on blank cards or slips of paper and then sorting them affords a very useful way of making a logical and easily memorized order.

(To be continued in January issue.)

SOME FARMING PROBLEMS UNDER WAR AND AFTER WAR CONDITIONS

By CHARLES B. WING

(Mr. Wing is President of the Wing Seed Company, Mechanicsburg, O. A farmer's seedsman and a farmer himself, he is familiar with the demands of the country for food production. What he says about grain, pork and cattle production is of interest.)

YOUR editor has asked me for an article concerning the farm problems of today. I wish I knew what to advise Ohio farmers. If I did, I would make a pile of money from my own farms during the coming year or two.

It has been my privilege to gather some few facts that have an important bearing upon the final situation and I am glad to tell you what I know about these things and to give a few suggestions, but the present times are so far out of normal, and the issues involved are so great, that it would take a much wiser man than I am to give any very definite advice.

We farmers operate at all times on rather close margins. Sometimes we feel well paid, many times we know that we sell our products at cost, or maybe less than cost. It is absolutely necessary for us to give careful attention to what is going to pay us best.

I can make one statement with which no one will disagree, and that is, that our first duty, and the first thing that all of us have in mind, is to regulate our affairs in such way as to help to win the war as soon as possible. All of us have already planned to do this, and nobody is going to change.

For the present, our Government is asking for maximum production, particularly in grains and pork, but also for good production in beef, dairy products, and many other items. I think we are all doing everything we can to increase production along these lines.

THE GOVERNMENT WILL STAND BEHIND THE FARMER

On the other hand, most people think that the war will end in 1919, and when it does end, considerable reconstruction will have to come about. Personally, I feel that the United States Government itself should stand by the farmers a little for some months after peace is declared. I think we should be protected from violent reaction.

Everything that we produce at present is costing us very high prices, and if for instance speculators broke the corn market from $1.25 a bushel to 60c a bushel, it would seem to me to be a hardship which we should not be forced to endure. The same principle should be applied to all of our products for a time, and I have faith in our Government to think that they will do a reasonable amount to prevent too violent readjustment during the few months after peace comes.

Now, let us study for a moment something of the conditions that will probably prevail the world over when peace is declared. In the first place, the Argentine Republic is said to be holding back a large amount of beef cattle which can not be marketed now on account of the long ocean haul. We have a shorter haul and are getting higher prices than they would ask. I believe they are also holding back some grain for a similar reason.

Australia and New Zealand are also accumulating some extra stocks of meats, principally mutton. To partly

offset this, Russia is in a chaotic condition, not producing enough food to prevent starvation, and Russia has always been a strong competitor of ours, especially in the production of wheat. I think it will be some years before they settle down sanely in the country to produce the surplus that they did before the war.

IS THERE DANGER OF THE OVERPRODUCTION OF GRAIN?

I think that there is danger, however, of over-production of grains, unless we use some sagacity. High prices and Government stimulus combined, have placed not only the United States, but England and France, on a grain production basis far in advance of what prevailed before the war. Furthermore, our own Government is storing some grain to take care of a possible short crop. If we happen to have a full crop, and if we had all become accustomed to growing too much grain anyway, I think I can see considerable danger of over-production in this line.

During war times, we have considerably increased the production of pork. This is an item that can be produced rapidly, and it seems possible to me that after peace comes, we may have an over-production in this line.

Cattle, I am not sure about. Great areas in the West have been severely crippled by two or three causes: drouth in some sections, the settlers taking up homesteads in some others, absence of skilled labor such as is absolutely required on the great ranches, and high prices on market have all combined to produce liquidation, and I think the United States in particular is short of cattle today, and will be much shorter yet in six or eight months from now. To offset this, we have certainly a lot of cattle in the Argentine Republic to consider, but we have further a depleted condition in all of the warring countries. We must further remember that it takes three or four years to produce cattle, whereas hogs are produced in not much more than that many months.

These conditions make me feel that farmers will be wise to look ahead and as soon as possible after the war breaks to go into legume growing much more extensively than they are now, to eliminate a good deal of their grain production, probably to cut down a little on pork production and to hold on to their cattle, both dairy and beef stock.

ALFALFA SEED SHOULD BE SOWN

In the legume crops, of course, I wonld put Alfalfa in the front rank, and if the war is going to close in 1919 as all of us expect, I think the seeding of alfalfa the coming season should be very much more extensive than it has been any year in the past. Present acreage is reduced to the minimum, or almost to the vanishing point, and I think this crop will pay when many others will not.

I am sowing nearly all of my own alfalfa on wheat now. I do not like this way as well as sowing in barley, but when we must grow wheat, it is the only method that is open for me, and I am getting fair results. This method will give us a chance to cooperate fully with the Government, and still protect ourselves from after-the-war readjustments. Alfalfa seed this winter will be lower priced than clover seed, and in my opinion, the crop will pay better after the war ends than the clover crop will.

Alfalfa enters largely into the plans of all dairymen. I think that dairy stocks have been depleted the world over, and that this business is on a firm basis today, and will continue firm

after the war. Any dairyman who can handle his labor problems should, in my opinion, plan to continue his business.

I think that for the next year or so, it might be unusually profitable for farmers in the corn belt to produce some of the beef animals instead of depending so largely upon the range. To produce their beef animals, or dairy animals either, in the most efficient manner, requires two things, namely, legume crops and silos.

I have a feeling which may be right, or may be wrong, but I am very sure that we should begin our own readjustment on these farms at as early a date as is consistent with winning the war, and that the price of seeds involved should not make much difference.

Clover seed will be extremely high this winter, but I think it will pay better to use a reasonable amount of it, than to prŏduce too much corn, which may possibly sell at a loss after the war ends. I do not really look for corn to sell at a loss, but I think it may drop to the cost of production, whereas I feel safe in my own mind that any legume crop planted during the coming year will show a good profit.

PEACE OVER EARTH AGAIN

By EDWIN MARKHAM

(Mr. Markham, the author of "The Man with the Hoe," published last year in "The People's Home Journal" the following poem. It is more appropriate this year than last. Mr. Markham considers this the best poem he has ever written.)

Rejoice, O world of troubled men;
For peace is coming back again—
Peace to the trenches running red,
Peace to the hosts of the fleeing dead,
Peace to the fields where hatred raves,
Peace to the trodden battle-graves.

'Twill be the Peace the Master left
To hush the world of peace bereft—
The peace proclaimed in lyric cries
That night the angels broke the skies.
Again the shell-torn hills will be
All green with barley to the knee:
And little children sport and run
In love once more with earth and sun.
Again in rent and ruined trees
Young leaves will sound like silver seas;
And birds now stunned by the red uproar
Will build in happy boughs once more;
And to the bleak uncounted graves
The grass will run in silken waves;
And a great hush will softly fall
On tortured plain and mountain wall,
Now wild with cries of battling hosts
And curses of the fleeing ghosts.

And men will wonder over it—
This red upflaming of the Pit;
And they will gather as friends and say,
"Come, let us try the Master's way.
Ages we tried the way of swords,
And earth is weary of hostile hordes.
Comrades, read out His words again:
They are the only hope for men!
Love and not hate must come to birth;
Christ and not Cain must rule the earth.'

CUBAN PROGRESS IN HORTICULTURE

By G. KERR FULTON, '19

(Mr. Fulton has spent a number of winters in Herradura, Cuba, where for sixteen years his father has maintained an extensive vegetable garden, growing principally tomatoes, eggplants, and peppers; besides this, thirty-five acres of oranges and grapefruit are now bearing nicely.)

CUBA was discovered before the United States, and within one hundred years after the date of discovery the island was well settled, cities had been built, and agriculture was in a flourishing condition. One would think that at present Cuba would be, agriculturally, the most modern country in the Americas. However, during the time that Spain held dominion over the island, such restrictions were held over it that agriculture progressed very little. In order to protect the Spanish trade of wines in Cuba, they permitted, by law, the growing of only two grape vines per head for each family. The public school system had never been developed, intense methods of usury were practised, and the Cubans were kept on the move from one farm to another; consequently, the farmers were kept in ignorance and poverty. Very few orchards existed, and no crops were grown that required much expense in their production. Some of the wealthier farmers had small orchards and grew limited quantities of sugar cane. The common crops of the island were tobacco, sweet potatoes, rice, and the native fruits which grow wild in abundance.

THE UNITED STATES AND CUBA

As soon as Cuba won her independence all industries began to open up and develop. A great many people from the United States went to the island, and due to their influence an agricultural experiment station was established, which made many thoro investigations. Today, agriculture, which chiefly involves horticulture, is extensively practised, and is by far the chief industry of the country. The largest percentage of sugar grown in North America is grown in Cuba. Of the crops, sugar cane is the most important one. Tobacco is second, pineapples are third, and vegetables are fourth.

THE LABOR PROBLEM IS OF INTEREST

The poorer class of people on the island have been kept in ignorance and poverty for so many generations by the Spanish government that they do not readily become educated. The public school system has been well developed and the children are compelled to go to school until they are fourteen years old, yet the children of the country districts seldom pass the third or fourth grades. One of the axioms of Cuba is: "Once rich and educated, always wealthy; but once poor and ignorant, always poor and ignorant." There are two distinct classes of people, the wealthy and the poor, which have nothing to do with each other except in a business way. The former are well educated and very shrewd. The latter are ignorant, irresponsible, will not save money, and have no ambition to progress in any way.

The customary wage for the laborer has been one dollar a day until this last year. Now wages have advanced to one dollar and a quarter a day. That is a low wage, but it is what their work is worth, and they are completely satisfied. It is quite necessary to keep them separated while they are working or they will spend too much time in talking, which is one of their favorite pastimes. When they are working with anything that requires care, one must

keep an eye on them to see that they do not change methods of labor.

HOW WORTHY IS THE LABORER OF HIS HIRE?

Just to show how thoughtless the average laborer is, I will cite several instances.

One American gardener had two farms. One was a grove where the Cuban families lived and where the stables and barns were located. The other farm was on a lake about a mile away from the grove, where vegetables were grown. The gardener lived in a small town near by. Tuesdays, Wednesdays, and Thursdays of each week were picking and packing days at the truck farm. Thursday was the shipping day, and was the day when the teamster brought the team and hauled the vegetables to the train. Altho the teamster knew that the vegetables were packed and that he was supposed to bring the team each Thursday morning, he would forget it every time if the gardener did not tell him each Wednesday evening to be sure to bring the team and wagon with him the next morning.

Another gardener had planned to fence in a small piece of land for pasture and had dug the post-holes, but in the meantime, it became extremely dry and the grass dried up; so he did not put up the fence. Some time later he decided to plow up the land and plant a crop. One afternoon he told one of the Cubans to get a shovel and fill up the post-holes. The Cuban went to the shed and took the first implement that he found, which was a post-hole digger. The next morning when the gardener went out to plow the land he found that all the original post-holes had been filled, but there were a couple of holes beside each of the old ones where the Cuban had used his implement to get dirt with which to fill the holes. Occa-

Cutting sugar cane

sionally one can find a laborer who is trusty and feels responsibility, but such men always have steady work. There is usually an abundance of cheap labor to be found.

Each laborer carefully saves his money until he has fifteen or twenty dollars ahead, then he goes to the city and has what he calls a "big time"; so they are always poor and live from hand to mouth. Their homes are built of a framework of logs and small saplings, covered with palm leaves, which can be built at a cost of fifteen dollars or less.

Farm laborer's palm shack in Cuba

FROM SUGAR CANE TO SUGAR

A certain amount of sugar cane has been grown on the island for the past century. Since the Spanish-American War the sugar industry has increased immensely. It is a crop that requires considerable capital to be invested; consequently the most of the crop is grown by corporations, which put out immense tracts of cane. These corporations are chiefly made up of Cubans, Americans, and Englishmen. Since the present war started the sugar crop has been doubled, so that now the largest part of the sugar produced in North America is grown in Cuba. There are at present one hundred and ninety-nine corporations on the island growing cane. The most modern and improved methods are employed. Each corporation has its chemists for analyzing the soils in order to determine the fertility required. They also analyze the cane for sugar content. Many cane mills are distributed over the island which manufacture No. 1 brown sugar. Due to the monopoly which the American Sugar Refiners Company holds on granulated sugar, all of the brown sugar must go into the hands of this corporation before being shipped to the United States to be refined into granulated sugar. The time is coming when the finished product will be made on the island.

TOBACCO INDUSTRY FLOURISHING

Tobacco is not grown in all parts of the island, but is limited to the western end, where the soil is ideal for its growth. Thruout this district each Cuban grows a small tract of tobacco from which he is able to make a living along with his odd jobs of labor. Be-

sides the many individuals growing tobacco, there are several corporations which grow large tracts. These companies use irrigation and modern methods, and produce some of the best tobacco in the world. On soil which is exceptionally well adapted for tobacco, they inclose the tract with mosquito bar which protects the plants from insects, hot sun rays, and beating rains. It is set the young plants and keep them cultivated for a short time. After this, they pasture goats in the fields, which do not touch the plants, but keep the weeds cleaned out. Some of the poorer pineapples are used by canneries to make preserves and sweets, of which the Cubans are very fond. The good ones are used for home consumption or are shipped to the United States. During

A pineapple field; alternating strips of ground for other crops

in these plots where they produce the famous Spanish wrappers which bring from two to four dollars per pound.

MANY FRUITS ARE GROWN

Cuba is the native country of many semi-tropical and tropical fruits. It has highlands, lowlands, swamps, and mountains. Almost innumerable varieties of fruits grow on the island. Pineapples are the most important of the fruits and are very easy to grow. They the season they export as many as forty thousand crates per week. Standardized methods of packing are used, and the pineapples from Cuba and the Isle of Pines are among the best to enter the market.

The Cubans do not grow citrus fruits, so that there are comparatively few orchards, except those owned by the growers from the United States. All of the oranges are used for home consump-

tion Because the Cubans do not like anything that is the least bit sour or tart, all of the grapefruit is exported to this country. Bananas, lemons, limes, guaves, mangoes, and many other varieties of fruits are grown to supply the home markets. There is expected to be a big future for citrus fruits and grapes.

LONG SEASON FAVORS VEGETABLE GROWING

Vegetables is one type of crop that has been of most interest to the American people in Cuba, and has been developed by them. The settlers who first went to the island tried growing tomatoes, which they found succeeded very well. Peppers and eggplant were started for three or four years before they became popular. Now they are the most important vegetable crops, because they grow exceptionally well in Cuba and have less competition in Florida than tomatoes. The main trouble was found in the dry winters. So many of the winters were dry during the months of January, February, and March that large profits were not made from vegetable growing. About the year of 1910 some of the growers began using irrigation. The peppers and eggplants responded so well that today every gardener of any extent has some means of irrigation. The gardener that I know best has a six-inch centrifugal pump which is driven by a steam engine. This outfit will pump eleven hundred and fifty gallons of water per minute and it takes six men to handle the water in the ditch system, which is used entirely. He scatters fertilizer between rows of peppers and eggplants every two weeks and irrigates the fertilizer into the ground. By this system the peppers reach waist height and the eggplant, shoulder height, yielding enormously. The peppers will produce about five crops a season, requiring about three weeks per crop. During these dry seasons it is found that each square foot of ground absorbed four gallons of water every two weeks.

While they have fewer of the vegetable diseases common in the United States, they have others which have been difficult to control. A leaf-disease on peppers limited them to only one crop. This has been overcome by spraying the plants with bordeaux mixture every two weeks thruout the season. A wilt on the eggplant almost completely destroyed the crop for a couple of years.

In the beginning it was found that the only way to ship vegetables was for the growers to be organized into associations. At first local associations were formed, but in 1914 they all united, forming the Cuba Fruit Exchange. This exchange now handles most of the fruits and vegetables shipped from Cuba to the United States. Each local association retained its own brand, and each shipper stamps his own name on the crates, so that the commission men know exactly whose fruit they are handling.

The association buys all supplies, establishes all modern methods of standard packing, and takes care of the product after it is put on the car. When the association makes its shipments each individual reports the number of crates supplied. These are telegraphed to the association's representative in New York. He then has them all distributed among the commission men before they reach New York. In that way each commission man knows exactly what he will have ahead of time, and none of them are ever overstocked.

Cuba has reached a high development in the growing of sugar cane, tobacco, and pineapples.

STRAWBERRIES FOR THE HOME GARDEN

By E. W. MENDENHALL

(Mr. Mendenhall is a State Horticultural Inspector. He makes a condensed statement of the essential needs for growing strawberries.)

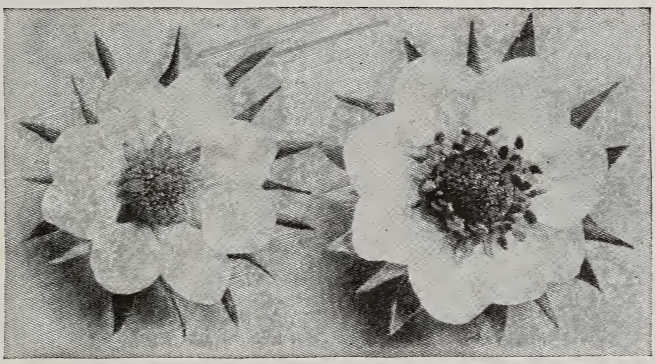
STRAWBERRIES are a good crop to grow to bring returns quickly and to come early in the season when they are the most welcome and appetizing fruits in our homes. Every farmer should grow a sufficient quantity, at least, to supply the home.

The strawberry does well in moist, cool-growing conditions, but must have good drainage. A gently sloping site which gives good air and surface drainage is to be preferred.

Soil for strawberries varies a good deal with the variety and locality, but the most suitable is a deep, sandy loam top-soil with a more or less porous subsoil. Any soil that is fertile and well drained will grow a crop, if properly handled.

There are two important things to consider in growing strawberries. namely, good soil texture and a liberal amount of plant food.

There is no crop that responds more readily to heavy fertilization than the strawberry, but we should be careful to give a *balanced* ration. While they do not take up large quantities of plant food, too much nitrogen induces the production of rank growing vines and uneven ripening of the fruit. A good supply of phosphorus and potash are required for large crops of firm, good quality fruit. Manure is really the best general purpose fertilizer for strawberries. On sandy soils it increases the capacity to hold water and improves the texture of the clay soils, preventing the packing and cracking which is injurious to the plants. The manure should be well decomposed before applying, on account of weed seeds. Green manure crops are advised, as they supply the humus which is the essential requirement of soils for strawberry culture. They also supply the nitrogen which is needed. The green manure crops are especially economical soil builders if farm manures are not available.



Pistillate and staminate flowers of strawberry plant

SPRING PLANTING IS ADVISED

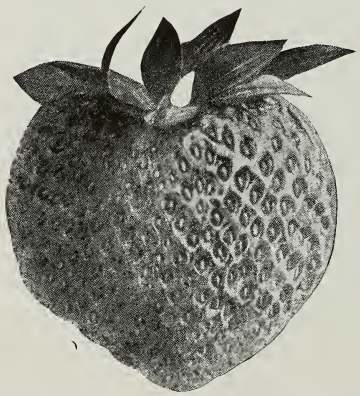
The early spring is the best time to set the plants; this should be done as soon as the soil can be worked. It is better to plant on the ground that has had a cultivated crop for one year to

rid the soil of the white grubs which are often found on sod lands. Furthermore, after being under cultivation a season the weeds are reduced. The soil should be made very fine and firm before planting.

The strawberries are usually grown by the matted row system. The rows are spaced three to four feet apart and the plants set from eighteen to thirty inches in the row.

Strawberries are easy to transplant. A cool, cloudy day, or just before a rain makes a good time to set the plants. The roots are very susceptible to injury from heat and dryness.

Frequent hand hoeing is a good practice and the first cultivation should be rather deep in order to loosen the soil



Sample—a variety well adapted to Ohio

which has been tramped in settling the plants.

The flowers should be pinched off the first season, if not, the vigor of the plants and the production of runners will be decreased. When the runners start to form, the soil should be kept mellow to encourage rooting.

Strawberry plants should be mulched with wheat, rye or oat straw after the first hard freeze in the fall. The purpose of this mulch is to protect the plants from alternate freezing and thawing during the winter and early spring. The mulch also conserves the moisture, smothers the weeds and keeps the berries clean during fruiting season. As soon in the spring as the growth commences, the mulch should be opened up over the plants sufficient to allow the growth to come up thru it, but leaving enough straw about the base of the plant to keep the berries clean and conserve the moisture.

The strawberry patch should produce at least two good crops before the patch is abandoned.

VARIETIES

When strawberries are desired for early eating, Fairfield, Haverland, or Senator Dunlap should be planted. They are good in quality and yield well. The Gandy and Chesapeake are the best late varieties. For high table quality William Belt, Bulach, Sample and Marshall take first places in Ohio. The Warfield, Senator Dunlap and Gandy figure as the choicest varieties for canning. For near market, Sample, Parson's Beauty, Senator Dunlap and Haverland figure as the best varieties. For distant market, Warfield, Gandy, and Aroma are better adapted, as they stand shipping better. Of the fall bearing sorts the Superb has large fruit of good quality, and the Progressive is an unusually prolific variety.

AMERICA'S MISSION

Millions in hungry lands now look to America for food.

In their misery and famine they cry to us—

We must save that we may give.

It is America's mission, our opportunity to serve.

FOOD WILL WIN THE WORLD.

THE HOME FIRES KEPT BURNING

By Albert T. Haag, Jr., '20

(The joy that these chatty letters from the Alma Mater brought to the boys on the farms and in the camps can not be expressed in words. Perhaps, no university has sent out such letters as has Professor W. Paddock. The boys receiving these letters showed them to their friends from other colleges to the envy of all.)

On the twentieth of December, 1917, there was sent out from the Department of Horticulture, Ohio State University, a letter to each former horticulture student including those who were enrolled in the service of their country, whose addresses it was possible to obtain.

The main object of this letter was to bind the former students and soldiers to the common interests to which they had clung while at the University.

The boys were asked to cooperate in the work of getting into touch with all the horticulture students, and they responded willingly to this call. By enclosing lists containing names and addresses, all were kept in contact with each other.

That there was much appreciation on the part of the recipients was evidenced by the many replies that were received by the department, and many interesting messages came back from across the water.

Accordingly, a second letter was sent out: a third—a fourth—until it has become the practice to send one of these cheering and delightful letters about once a month, both to the boys who are "over there" and those at work over here.

To show the growing interest we might cite the 108 replies in answer to a single letter.

The boys were told of all the various activities and events that were going on at the University, among them the great preparation for the annual apple show last year and the consequent disappointment because the building was closed for lack of heat; the good work of the apple judging team; the resignation of two faculty members, namely, Professor Davis, who took up responsible work as head of the State Bureau of Markets, and Mr. Mosier, who entered the United States Bureau of Markets.

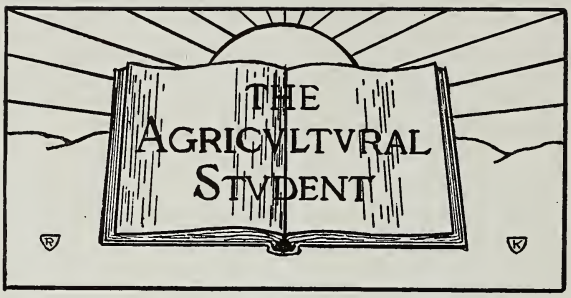
Then, farmers' week; the tractor show; the early closing of school and the dropping of the final examination requirements; the many aviators on the campus; and later, in spring as nature brought the weary world to renewed life and as more and more students were leaving, the great lonesomeness that came to the department; the need for students to carry on the pruning, spraying, care of crops, etc.—all these were of interest to the soldier, hungering for news, both in France and in camp.

The boys were asked to send pictures of themselves and many responded. These were put into an album which will prove to be immensely interesting and valuable in years to come. To arouse those to action who were slow in sending their pictures, a photograph of the entire horticultural force was enclosed in a recent letter, in the hope that the compliment would be returned.

The service flag of the horticulture department now contains 94 stars, three of which show that those whom they represent have sacrificed to the utmost.

Four of the faculty have also left, namely, Professor F. E. Allen, now Second Lieutenant, who is rendering

(Continued on page 251.)



OHIO STATE UNIVERSITY

A Medium for Exchange of Ideas Between College and Farm

Published by the Students and Faculty in the College of Agriculture. Established 1894. Subscription Price, One Dollar the Year. Entered at the Postoffice at Columbus, Ohio, as Second Class Matter. Member of the Agricultural College Magazines, Associated.

CHRISTMAS

At Christmas time we celebrate the birth of a Saviour. This Christmas time we also celebrate the birth of a peace world—the victory of humanity over the forces of organized and arrogant greed.

The words of Goldwin Smith, "Above all nations is humanity," seem peculiarly appropriate at this time. The thought that "above all national and personal selfishness is humanity" has been gloriously exemplified by America in this war. We had no selfish ends to serve. We were one of the champions of the rights of mankind. Not to avenge, but to succor, the ravished countries of Belgium and France, America entered the war, and now with the same spirit she is to help Germany. It is surely the Christ spirit back again —"Love your enemies."

As Christmas comes to us this year, our thoughts turn to mutual helpfulness. The Red Cross posters give us the text: "Inasmuch as ye have done it unto the least of these My brethren, ye have done it unto Me." In spite of the reign of hate thru which we have just passed, there rises in our hearts a feeling of wider kinship, kindlier emotions, and nobler aspirations.

Christmas, even without the whole family present, will mean much more to us this year. There is a feeling of relaxation, a sense of assurance, a lessening of the tension. We know that the boys, our brothers and friends, will soon be back. Even those who are be-

reaved—whose loved ones have made the supreme sacrifice—may they not, even in their anguish, feel a solemn pride in having laid "so costly a sacrifice upon the altar of freedom."

The Christmas star shines brightly. It bids us rise to our opportunities, and be deeply thankful that we live to enjoy the fellowship of good friends and the freedom of a progressive civilization.

SINGING IS GOOD FOR CORN

THE stories of Indian agriculture are so frequently flavored by white man's philosophy that it is interesting to read in a recent book by Dr. Gilbert L. Wilson an account of the primitive American agriculture as told by Maxidiwac, or Buffalo-bird Woman, and interpreted by her son Goodbird. Maxidiwac was born in 1839, so that her early life was spent during the days before the white influence had permeated the Dakotas.

She and other women of her tribe cleared the land and prepared it for planting. "The young men," relates Maxidiwac, "often came out and talked to them, and maybe worked a little. However, it was not real work they did." We can imagine them dressed in their fancy colors and doing about the same quantity and quality of work that the society leader does in her garden.

The laborious process of preparing the soil is well told. "With her digging stick she (my grandmother Turtle) dug up a little place in the center * * * and circling around this from day to day she gradually enlarged the dug up space. The point of her digging stick she forced into the soft earth to a depth equal to the length of my hand, and pried up the soil. The clods she struck smartly with her digging stick, sometimes with one end, sometimes with another. Roots of coarse grass, weeds, small brush and the like, she took in her hand and shook * * * to knock off the loose earth. * * * She then cast them into a little pile to dry."

Such labor these women did and how long it would take to work an acre!

And then in the planting: "Around each of the old and dead hills of corn I loosened the soil with my hoe, first pulling up the dead roots of the previous year's plants. This * * * left the soil loose for the space of about eighteen inches in dameter, and in this soft soil I planted the corn in this manner. I stooped over and with fingers of both hands I raked away the loose soil for a bed for the seed. * * * I took a small handful of corn and pressed the grains a half inch into the soil with my thumbs. * * * I planted about six to eight grains in a hill. Then with my hands I raked the earth over the planted grains until the seed lay about the length of my fingers under the soil."

These fields were precious; the women erected platforms in them where they could sit, watch and sing to ward off crows and "thieves." But we have read elsewhere that the Indians did not steal from each other.

"We cared for corn in those days as we would care for a child * * * and we thought that our growing corn liked to hear us sing, just as children liked to hear their mother sing to them."

In spite of this tremendous labor, the Indian women were hospitable. If any woman fell ill the neighbors joined in to help her plant and tend her garden. If she died the land fell to her relatives who cultivated the field; but if they did not do this, any other woman

might take the crop and cultivate it for her own.

YOU ARE ONE!

You are an agricultural student, because everyone is in some way a student of agricultural conditions. Grocers, tractor salesmen, greenhouse builders, farm bureau agents, home makers and community workers are all specialized agricultural students. The war has emphasized the fact that the manufacturers and store keepers of all sorts are much interested in agricultural conditions. No man is truly educated to modern life unless he knows something of the farmer's problems. The basis of our existence is the products of the soil.

NOW THAT THE WAR IS OVER

You who read this—have you completed your education? New interest is being aroused in the classroom to meet the demands of a broader vista of the possibilities of education as a means of meeting the great problems of today.

You who read this—is there not a son, daughter, or friend who needs the college? The return of our boys from the front should lead them directly to the door of the college to complete their education before they take up their life work.

THE DEAN SAYS

Perhaps you have attended one Farmers' Week at the College or have been enrolled in one of the winter courses. We were glad to welcome you and hope that you found something of interest and value.

We wish again to call your attention to our Winter Courses in Agriculture. They last for eight weeks beginning on January 6, 1919. More than two thousand Ohio farmers have attended these courses and we have numbers of letters telling of the benefits they have derived from them.

The Winter Courses are thoroly practical, and the class work is so arranged that the gist of each subject is given in the shortest possible time. They are preeminently the courses for the farmer who is so busy at home that he can not leave his work for a longer period. The courses are open to all persons above sixteen years of age. We have had in attendance students varying from eighteen to seventy-five years of age and it would be hard to say whether old or young most enjoyed the course.

The Secretary of the College of Agriculture, Mr. T. G. Watson, will be pleased to send you a copy of the bulletin describing the Winter Courses. Why not come to the University this fall and take up this work?

If one Farmers' Week was good, why wouldn't eight weeks be better?

LET YOUR CANDLE SHINE

This year it seems very appropriate to place a lighted candle in the Christmas window. Nearly every home has a service flag. The candle displays your hope and confidence in the return of our boys, and the flag is a medal for your sacrifice. Invite the neighbors to your home and let carols be sung. Bring back the Christmas spirit which ebbed so low last year. Light your home to cheer the passing stranger. Hang the windows with wreaths of Christmas holly. Remember with a card your friends who might be much cheered by your thought at this season of the kindly spirit.

The spectre of famine abroad now haunts the abundance of our table at home.—*Hoover.*

Campus Notes

Mr. Edwin Spencer, assistant in Farm Management in the Extension Department, died Wednesday, November 27, of bronchial pneumonia at the residence of Mr. F. L. Allen, supervisor of extension schools. Mr. Spencer graduated from Hiram College in 1914 and secured his master's degree at Ohio State University in 1916, specializing in marketing in the department of Rural Economics. He spent the next two years upon the home farm at Hiram, returning to Ohio State November 15, as an extension worker in Farm Management. Returning from a trip to Marietta November 22, he developed influenza which resulted in bronchial pneumonia. He was buried Saturday, November 30, at Hiram.

In addition to Edwin Spencer, whose death has been mentioned in these columns, the following members of the Extension Department have been ill with Spanish influenza: Mr. W. H. Palmer, State Leader of Boys' and Girls' Clubs; Mr. F. L. Allen, supervisor of Farmers' Institutes and Extension Schools; Professor J. W. Wuichet, of the Animal Husbandry Department: and Mr. A. E. Anderson, assistant state leader of county agents.

Professor C. S. Plumb, of the Animal Husbandry department, has been asked to go to France to assist in the educational program that is being carried out among the American soldiers during the demobilization period. President Butterfield, of the Massachusetts Agricultural College, is in charge of the agricultural work being done under the direction of the Y. M. C. A. and the Army officials. It is probable that Professor Plumb will leave early in December.

The Animal Husbandry Department has shipped to the International Livestock Exposition at Chicago three carloads of cattle, sheep and hogs. The stock shows better quality than the exhibits of the past few years. The usual livestock show at the University was not held this year owing to the small number of Animal Husbandry students. Professors Plumb, Kays, Coffey, Conklin and Thompson attended the Exposition. Mr. Fyffe has charge of the stock.

On November 21 the University coal supply, stored in large piles west of the Engineering Laboratories, caught fire from spontaneous combustion and at the time of going to press is still on fire. A stream of water has been constantly poured upon the coal for the past ten days with only partial success. The fire is attributed to the high percentage of sulphur and phosphorus in the coal. The loss has been small.

The County Agents of the state have been in conference in Columbus and have had a most helpful week of pleasant associations and have listened to a most enjoyable series of talks. Several men of national importance took part in the discussion , namely, Lucius Wilson, Samuel Wilson, of the American City Bureau, Dean Frank Graves, President John Knox of School of Salesmanship. Soils and Farm Engineering were the special phases of agriculture discussed this year.

Home Economics Department

GOOD WORK DURING INFLUENZA EPIDEMIC

By JOSEPHINE K. BURNETT, '19

DURING the recent influenza epidemic on the campus among the members of the Student Army Training Corps, unselfish and efficient assistance was given by members of the faculty and University girls. When it was learned that conditions were serious and that help was badly needed, a number of persons from the Department of Home Economics immediately volunteered to aid in the preparation and serving of meals to the patients. At the beginning of the work there was not sufficient equipment at the barracks hospital, and stoves and cooking utensils were moved over from the Home Economics building. The rearrangement of the kitchen at the hospital was done concurrently with the preparation of meals.

The influenza patients have been cared for in the S. A. T. C. hospital and in the annex. The severe cases were confined in the main hospital and the lighter ones in the annex. The average number of cases treated daily was eighty-five, and up to date there have been only five deaths. According to Dr. LeSage, this remarkable record is due in large measure to the careful feeding.

Miss Grace Linder, aided by University extension workers, had charge of the preparation of the food. This was accomplished in the laboratories of the Home Economics building, because the barracks kitchen was too small. Roast meat, broth, oatmeal and baked apples serve as types of food prepared here. The hot food was transported to the diet kitchen of the barracks hospital by automobiles, loaned for this purpose.

Professors Edna N. White and Anna Van Meter planned the diets and directed others in the same work. Mrs. Grace Walker ordered all the food supplies for the hospital. Mrs. Blanche Bowers and Mrs. Maude Adams had immediate supervision of the breakfasts.

When the hot food arrived from the Home Economics building it was taken in charge by a corps of workers under Miss White and Miss Van Meter. Special diets, fruit drinks, eggs, and beverages were prepared in the barracks diet-kitchen by Miss Van Meter, Mrs. Walker and assistants. The Ohio Union helped also by sending hot, prepared food for the twenty orderlies on duty. The Red Cross was of great assistance in soliciting jams and jellies from all parts of the city. The food was served by the Home Economics helpers and some of the parents who had come to aid in nursing their sick.

Among those who took part in the work were the Home Economics staff, extension workers, alumni and students. Women of the faculty and several public school teachers in the city were also of great assistance.

Since the reopening of school, however, Miss Marie Freeman has charge of feeding the influenza patients. The work is mainly done by hired help. Miss Van Meter has been detailed to take charge of the special diets and will assist Miss Freeman in the dietitian work at the hospital.

THE SMITH-HUGHES CONFERENCE AT OHIO STATE UNIVERSITY

By Verno M. Detrick, '19

THE conference of the Smith-Hughes Vocational Home Economics Directors of the State of Ohio was held October 17-19, 1918, at the Home Economics building, Ohio State University.

The conference was held under the supervision of Mrs. Maude G. Adams and Miss Treva Kauffman, of the Department of Home Economics.

The program was as follows:

A Statement of Policies of the Smith-Hughes Law—By Dean Alfred Vivian, Supervisor of the Smith-Hughes work in Ohio and President of State Board of Education.

Conservation of Clothing — Mrs. Grace Walker, Department of Home Economics, Ohio State University.

Suggestions for Teaching Sanitation and Home Nursing—Miss Grace Linder, Department of Home Economics, Ohio State University.

Wisconsin Vocational Schools—Miss Emma Conley, Specialist in City Organization of the States Relations Service, Washington, D. C.

Lecture—Harold Powell, U. S. Food Administration, Washington, D. C.

Suggestions for Teaching Applied Art and Design—Miss Alice Robinson, Department of Art, Ohio State University, and Miss Minnie Volk, South High School, Columbus, Ohio.

Your Responsibility for Food Conservation in Your Community—Miss Edna N. White, Director of Home Economics, Ohio Food Administration, and Head of Department of Home Economics, Ohio State University.

Suggestions for Teaching General Science of Biology Applied to the Household—Raymond C. Osburn, Department of Zoology, Ohio State University.

Lecture—Miss Alice P. Norton, Editor of Home Economics Journal.

Round Table Conference on Smith-Hughes Economics Work as a Whole In Its Practical Application to Various Ohio Communities —Mrs. Maude G. Adams, Leader.

Lecture—Dr. W. A. Evans, President National Public Health Association.

There are twenty-three Smith-Hughes schools in Ohio. A list of these schools, including the names of the superintendent and teachers, is here given:

School.	*Supt.*	*Teacher.*
Ashtabula	H. C. Dieterich.	Helen Price.
Barberton	U. L. Light	Mary Brittain.
Bellefontaine	R. J. Kiefer	Helen Morrill.
Bryan	J. W. Wyant	Louise Eckles.
Bucyrus	W. W. Borden	Mrs. Smelker.
Covington	C. H. Detling	Elsie Grove.
Fremont	J. P. Timmons.	Marg. Gullette.
Gallipolis	O. S. Clifton	Helen Patterson
Lima—		
Cent. H. S.	J. E. Collins	Louise Woods.
South H. S.	J. E. Collins	Kath. Brown.
Elementary		
Vocat'l Class.	J. E. Collins	Hazel Brown.
Martel (Tully Twp.)	M. A. Shepard.	Vivian Bailey.
Oberlin	H. L. Rawdon	Prud. Stevens.
Pataskala	G. W. Brown	Kath. Koehne.
Sandusky	W. S. Edmund.	Edna Dunham.
Springfield	Geo. McCord	Myrt. Hullinger
Steubenville	R. L. Ervin	Cor. Applegate.
Van Wert	D. B. Clark	Helen Rice.
Wapakoneta	F. E. Reynolds.	Ida Basinger.
Waverly	E. W. Bowsher.	Mrs. E. Corson.
Wooster	G. C. Maurer	Edna C. Endly.

There are in the county two practice teaching schools where Smith-Hughes teachers are trained.

TWENTY MILLION TONS OF FOOD

"Twenty million tons, America's Food Pledge!" What does it mean? This pledge for the relief of Europe is just one more wonder added to our year of wonders. The signing of the armistice brought within our reach starving millions long cut off by the German lines and German submarines. America acted at once and raised her food pledge from seventeen and one-half million tons to twenty million tons. Within a week after the armistice was signed the first consignments of an emergency food order of over two hundred thousand tons had been dispatched. We realize that every ton of food that can be pushed thru our ports must be shipped, for there is no real peace in sight until the food situation is relieved.

WHAT IT MEANS TO EVERY WOMAN

Once more the call has gone out to "Save Food." You are summoned to an even greater task than last year. We must now fight even harder to win peace than we fought for victory and the fight is against famine and anarchy. The Allies and liberated nations face not hunger alone but the collapse of all that holds their civilization together unless we maintain a steady flow of food to Europe.

Will America keep her pledge to civilization and put twenty million tons and more across before next harvest? The answer depends on how the American woman sets her table, no less than on effective distribution of food in Europe, and on efficiency in handling and shipping supplies from this side. Three times a day she has the opportunity to guarantee her country's pledge.

THERE MUST BE NO WASTE

This plan rests on how much food there is in the world, how much can be transported and where this food is most needed. It makes no allowance for waste in America and very little for an increase of war rations in Europe.

The world's food has been figured, and waste in America will upset the balance sheet. This, then, brings the national pledge right down to the home table and gives every woman something definite to go on at once—rigid economy all along the line.

LEARN TO FACE A CALORIE

This new war on waste means far more than "stews" and "hashes" and "bread puddings," more than the gospel of the "clean plate." It calls for balanced rations, scientific feeding and learning to look a calorie in the face with due respect and without fear.

The training and discipline of last year will help. Go forward on this foundation and acquire that economic cookery for which certain countries are famed, but which they learned thru long centuries of short meat and dairy supplies.

There is no time to wait on this expensive teacher—experience. Take the short cut based on knowledge of food values. You are called now, in the name of humanity, to adjust your table at once, and to practice the most rigid economy in the face of apparent plenty.

Economy and good food can go together only when based on knowledge, whether learned from experience or books. So learn to face a calorie and respect the ration.

NO TIME TO MUSTER OUT

This is not the time for women to muster out. If you belong to an organization, stay with it. This new fight calls for organization. If you can't join an organization, keep mobilized anyhow until the war against famine is won.

Vocational Agriculture

INTERESTING WORK DONE IN THE HILLSBORO HIGH SCHOOL

By THOS. E. BERRY, '18

(Mr. Berry has been able to render, thru his teaching and demonstration work, a real service to his community. He is director of the Agricultural Department of the Hillsboro High School.)

ON account of its central location the Hillsboro High School draws pupils from fourteen of the seventeen townships in Highland County. It was not until last February, when the Smith-Hughes four-year agricultural course was introduced, that we had anything special to offer the boy interested in farming.

A room in the high school building is well equipped with agricultural apparatus for teaching and giving demonstrations. Class work, however, is not confined to this room, but the studies are carried on in a practical way. This is well illustrated by the method used last spring in teaching the courses in Horticulture, Dairying and Farm Crops.

After the class in Horticulture had studied the principles of pruning trees in the class room they were equipped with pruning shears and saws and taken to several orchards near the school. Here they were given practical instruction in the art of pruning, while they worked among the tree tops. This work was continued until every member of the class could prune peach,

Corn raising is one of the most popular projects among the pupils taking vocational agriculture

apple, pear, and plum trees, without any help from the Smith-Hughes instructor or county agent, who assisted in many of these demonstrations. Each boy then did pruning on his own farm.

The boys in the Farm Crops class did a very important work in helping the farmers in the community secure good seed corn. Much of our corn was of uncertain viability, so it was necessary to make a large number of germination tests. Almost all of this work was done in the agricultural laboratory. Twenty-five rag dolls and one eight hundred ear tester were kept in constant use from March fifteenth until all the corn was planted. Almost twelve thousand ears were tested in the laboratory in addition to what was done in the pupils' homes.

The class in Dairying tested milk for butterfat from one hundred and seventeen cows, taught the home folks how to balance a ration for dairy cattle, and did four weeks' work in judging, in addition to studying in the classroom a carefully prepared course in Dairying.

During the summer the boys who were enrolled in the agricultural course conducted a large variety of home projects. Five were with the dairy testing associations in different parts of the state. Other boys conducted their projects on their home farms. Two pupils raised purebred chickens; two engaged in seed-corn breeding, which will be continued several years; four each raised an acre of potatoes; two kept records on lard hogs, in order to determine the cost of producing a pound of pork; one raised three acres of corn, one raised four acres, and another ten; one kept a record on dairy cows; and one raised three acres of soybeans. Many other similar projects were conducted.

During the summer the Smith-Hughes instructor supervised the home projects, did much county agent work and assisted in numerous war activities.

The extension service of the school is growing rapidly. The boys and their neighbors from many communities bring many farm problems to the office. The county agent and College of Agriculture have been very willing to help us with much of this work. With such agencies at our service we are not afraid to "tackle" any farm problem. Since last February almost twenty-five hundred bulletins and circulars have been distributed to people in all parts of Highland County, thru the school. We are very careful to send these only where they are wanted. We feel that the extension service of the school alone is sufficient reason for its existence.

Our superintendent of schools, county agent, county and district school superintendents, and a large number of progressive citizens are very much interested in the agricultural course. They realize that it is rendering a very definite service to the community and to the farm boy, and are determined to make it the best school of its kind in the state.

DON'T SELL YOUR LIBERTY BONDS; TO HOLD THEM IS PATRIOTIC, TO KEEP THEM IS WISE.

Harry W. Lutz, '17, is with the Sanitary Corps, and is much interested in his work in bacteriology and chemistry. He is located in Washington, D. C. He made a visit to Columbus recently.

Lieut. A. W. Barr, '19, has been discharged from the aviation work after spending three months at the flying field at Garden City, L. I. He goes to his home in Amanda, Ohio.

Prof. L. M. Montgomery, of the Department of Horticulture, has just recovered from an operation which he underwent in the University Homeopathic Hospital. He expects to take up gardening work under the Red Cross in France.

Percy Wiltberger, '15, is leaving for France for two years in bacteriology and sanitary corps. He has been in training at Yale University.

Wallace Love. '13, is farming at Lockwood, O. Besides this his community has insisted upon his doing some teaching work. He visited Columbus November 30th to attend Ohio State-Michigan football game.

W. D. Axtell, '16, formerly instructor in the Dairy Department, is now in the navy. He spent a day at the University recently.

Lieut. T. G. Phillips, '12, is with the sanitary corps. He has received thoro training in physiological chemistry at Columbia University, after which he studied bacteriology at Yale University. Recently he received orders to report to Camp Crane, Pennsylvania, where he has been assigned to service in a hospital unit for overseas duty.

Lieut. A. H. Smith, '15, is in the gas defense division of the chemical warfare department. Before leaving for Yale last year he was employed by the Bureau of Mines in gas defense work. He is now in France.

G. N. Dagger, '10, former farm management demonstrator at Ohio State University, is now in France with 140th Regulars, Battery E.

Lieut. D. D. Hughes, '16, is stationed at Camp Travis, Texas, in 53rd Machine Gun Batallion.

G. G. Guiler, '16, has just been released from the aviation school at the University of Illinois. He has returned to his home in Whigville, O.

Lieut. M. E. Wyant, '18, who was married to Pauline Atcheson, '17, has been at Camp Taylor for three months and then he was transferred to Central Officers' Training School at Camp Gordon, Ga., where he received his commission. He has been discharged into Officers' Reserve Corps.

(The forestry service in France is well described by Forest W. Dean in this letter. His remarks regarding the turpentine industry are especially interesting and instructive.)

France, August 9, 1918.

My dear Professor Scherer:

Today I received the second issue of the Ohio State Forestry News letter, dated May 28, 1918. On May 22 I received the first issue. Since that date I have had it upon my mind to write to you and let you know the extent of my appreciation. I do confess that I did neglect doing that very thing, but I want to tell you, Professor Scherer, one's time Over Here is mostly spent to the tune of the bugle calls—to work, to eat, to sleep. I do not want you to think I have forgotten your friendship. I want to thank you very kindly for the letter, and newspapers that you sent to me previously.

We are in the Southwestern portion of France, not very many miles from the coast line, in the Maritime Pine Region of the Landes. Undoubtedly here is the most continuous stretch of pine forests that can be found anywhere in France. Stretching out across the coastal plain the forests are continuous save for the few isolated open patches of agricultural land devoted to rye, barley, and corn, and cared for so diligently and patiently by these good peasants and friends of ours. There are very few people who love the soil more than the French peasants do. Altho in this region they still prefer the sickle and the hoe, their ability cannot be beaten in getting results. The women are doing all the farming, and it is their daily task from sunrise to sunset in the fields of France.

There is so much to say concerning this region. The forestry system worked out by the French is wonderful. Since the war the forests have been neglected, especially the young growth. In many places the regular thinnings have been abandoned and the undergrowth of ferns, broom grass, briars and white oak thickets have taken possession of the forest floor. It is in these places that forest fires are started which prove very disastrous. We have had the opportunity of fighting a few, and they are about the hottest thing I have ever experienced.

The trees that we are felling will average twelve inches in diameter and a height of eighty to one hundred feet. They are fine specimens, tall and rangy, and clean boles running nearly to the tops. The French have preferred to let these trees stand—instead they have devoted all their time to thinnings and cutting the small poles into lumber. In this way they have secured a wonderful stand of young growth from these large trees. Acres and acres of this young pine are now growing up. For reforestation of barren lands I think this pine could not be excelled.

The history of these forests only dates back fifty to sixty years. Before that time it was an area consisting mostly of sand dunes and swamps. These sand dunes are still quite plain, becoming more and more evident as you approach the shore, where the active ones are encroaching upon the line of trees bordering the coast. Besides the pines, the remaining vegetation is of little importance.

We have four mills going at full speed night and day. They are located within a radius of twelve to fifteen miles from each other and battalion headquarters. Our district has led all other operations in France in the amount of sawn products feet board measure. Last month the total for all our mills was over four million feet board measure. We are surely proud of our record and hope to better it for this month. Most of our lumber is being used for constructive purposes, camps and hospitals. Piling for building docks, road planks and entanglement stakes go to the front.

The lumber is not of the best quality; quite brashy and resinous. The trees have all been peeled for the pitch, the turpentine industry being conducted on a large scale by the French. The trees are tapped for the resin at an early age. I think the average would be twelve to fifteen years, of course, depending upon the size of the stem, but by the time the tree is forty-five to fifty years old, the stem has been worked over several times, the old scars appearing upon the veterans as deep furrows running lengthwise from the bottom of the trunk to the height of about twelve feet. Some of the old wounds have healed over; some have not, and as the result there is a waste of lumber from the old scars and resinous butts.

The method used by the French is very interesting and more economical and less wasting than our system, as I know it. A very small

portion of the tree is peeled at one time, except in the case of the larger trees where three or more cups may be seen hanging from the same tree.

The cups are quite small and are supported by a nail driven a few inches below the fresh cut. They are attached to a trough which is driven into the tree at the lowest margin of the fresh cut. The entire area across will not exceed six inches on any of the larger trees. The first start is made at the very bottom of the tree. There the cups remain for one year. From time to time during the year peelings are made just above in order to keep the new wood exposed as much as possible. At the end of the year a new location is made on the tree in line with the old one about twelve to fifteen inches above. This is continued each year until a height of about twelve feet is reached. It takes four to five years to reach this height on one side of the tree. At the end of this period the operation is transferred to another portion of the tree, and so continued until the tree has been completely worked. Often one comes across an old tree which has been circumscribed several times.

We have a splendid organization of men and I am very proud of the "Tenth." We are the pioneers at the game over here and next month we will celebrate our first anniversary in France. In our regiment, you would be surprised to learn, are a number of university men from Michigan, Yale, Cornell, Penn State, etc. It is this type of men who make it such a splendid organization. It is surely a pleasure to know them.

My health has been very good and I have no kicks coming whatever.

Sincerely your friend,

FOREST W. DEAN.

(We are printing extracts from letters from 1st Sergeant Clarence M. Sallee, who is with Co. E, 38th Infantry, A. P. O. No. 740, A. E. F. Sgt. Sallee enlisted at Pittsburgh, in Regular Infantry, Dec. 13, 1917, and was sent to Columbus barracks; arrived at Camp Green, Charlotte, N. C., holiday week; was made a corporal in January; sailed for France late in March, arriving there April 7, 1918; promoted to sergeant early in June; and to first sergeant early in August. He has certainly been in the thick of the fight. His letter is thrilling.)

October 1, 1918.

"There are plenty of hikes, and sometimes no sleep, but there is nothing strenuous just now. When we hike at night we eat and sleep the next night, so the second night out is no harder than hiking by day.

"Baseball news is of no interest to us any more. Pay day and chow are the two things discussed by the average soldier. We were on French rations when we first went to the front, but were not served wine. We have always been able to get water, but it is chlorinated.

"I have been thru two engagements as line sergeant and two more as first sergeant, but will not be in the front line again as an enlisted man, as first sergeants and company clerks stay at regimental headquarters and carry on the office work while the company is at the front

"We understand our regiment is to be decorated for the part it took in its first battle, but the event has not yet taken place. Our battalion, in that battle (Note: On the Marne, East of Chateau Thierry, according to other information) was holding the river bank, but our company had dropped back a hundred yards to the railroad. The platoon I was in was next to the French. After the barrage the Boche came thru the French some distance up on the right and took the hill back of us on our right. They started machine-gun fire at us and we were in a bad fix for a while. We had two platoons on the river bank, at this time, and two in support at the railroad. We were holding over five hundred yards of front with the men ten to twenty yards apart. Twenty men in the section I had were holding two hundred yards of front. Each man dug himself a pit and it was a lucky thing he did. After the French fell back we dropped back to the railroad track, but the Boches were coming from the right, and in back of us, so we got out of the trench and formed a skirmish line running at right angles to the river. We kept up rapid rifle fire and fell back to the left to the main body of our company, where we took up a position in the trenches just above the track. By this time they had broken thru the French line for a good many kilometers. From here we went forward again and took up a position on the railroad. While there, I was sent up the track, with three other men, about three hundred yards to the woods we were in before we dropped back. We found our old position unoccupied, but as there was a party of Germans one hundred and fifty yards in our rear it was up to us to move, and to move fast. I wanted to go into my dugout and get a box of candy that had just arrived from home, but did not have time. Soon after we reported to our captain the ene-

(Continued on page 252.)

FIRST PRINCIPLES OF AGRICULTURE, Revised. Goff and Mayne. American Book Company, New York.

(Many of the readers of The Agricultural Student would necessarily consider this book in the light of use for high school agriculture. For elementary schools this book might be of greater value.)

In keeping with the recent trend to credit agricultural training of equal educational value with the other subjects taught, numerous text-books on agriculture have been forthcoming. These vary widely, not so much in the actual facts as they are known, but in the manner of presenting them. Faults in revision, content, adaptability, style of expression, illustrations, cuts and photographs, or faults in type and paper used in printing, detract from the value and efficiency of a book as an educational factor. From these various angles a review of *"First Principles of Agriculture,"* by Goff and Mayne, was briefly made.

The book, recently revised, is an attempt to cover the vast field of agriculture in one small volume. This fact at once groups it with those books, decidedly elementary in their treatment of subjects, and for that reason are unsatisfactory for use in vocational agriculture teaching. While the subject matter is clearly and simply presented, the formal arrangement of the material into separate and distinct lessons bespeaks an air of finality which is not commendable. The majority of illustrations, cuts and photographs used serve well their purpose. Exception to this will be noted, however, in those illustrating the breeds of livestock. Here the pictures fail completely in conveying a clear idea of breed characteristics, the purpose for which such pictures are intended. More actual photographs carefully chosen would add to the interest of the reader. It is understood that much important material will need to be left for less elementary texts, yet a little more human interest and experience woven into the thought of the book would add much to its desirability.

R. H. SCHREIBER,
Department of Agricultural Education.

HOME FRUIT GROWER, by M. G. Kains, New York: A. T. DeLaMare Co., 1918. 213 pp., 146 illustrations. Paper $1; cloth $1.50.

"Fine fruit is the most perfect union of the useful and the beautiful that the earth knows," wrote A. J. Downing years ago. With this idea in mind Professor Kains has written a book for the home gardener. In reading this interesting small book, one unconsciously absorbs the fundamental principles of growing good fruit. Let us recall the meaning of the word "amateur," which carries with it the idea of doing a thing for the love of it. So this book is for the amateur fruit grower.

"As a man is judged by the company he keeps, so a fruit grower is rated by the kind of fruit he grows," writes Professor Kains, and gives the reader an interesting discussion of how to choose the sorts he should grow.

Professor Kains discusses the planning of a fruit garden so that it may be ornamental and enhance the appearance of the home surroundings. He suggests fertilizers and the methods of soil treatment for the best results.

So simple is the discussion of proper pruning that any person with a fruit tree or bush can follow his instructions. "If people who plant fruit knew and applied a few general principles their trees would probably begin to bear younger, continue longer and produce better fruit year in and year out." The home garden usually possesses a few old and often neglected trees; the rejuvenation of trees is well explained.

What is more interesting than grafting one's own tree, to have early, mid-season and late apples on one tree; or sweet and sour ones? The method of grafting and budding is very clearly illustrated and described.

A chapter is devoted to dwarf fruit trees. It would seem that few persons with small lots know that there are dwarf trees which will take up little space and bear younger than the standard and larger trees.

Another perplexing problem of the amateur is the control of insects and diseases. Many persons ruin their trees with good intentions and spray with anything but the proper insecticide or fungicide. Professor Kains has simplified the general principles of controlling these pests.

There is a chapter describing storage cellars, and the proper conditions for the home storage of fruits.

Over fifty of the commoner, as well as the lesser known fruits and nuts, are discussed in a separate chapter.

To merely look thru the book noticing only the illustrations would inspire one to start a few fruit bushes or trees; and to read the author's enthusiastic discussion of the various fruits makes one long for a larger area of blackberries, strawberries, currants, grapes, raspberries, and the other fruits which are of superior quality picked to be eaten fresh and properly ripened. A. C. H.

THE HOME DEMONSTRATION AGENT CONFERENCE

The Conference of the county and urban home demonstration agents was held October 12-22, 1918, at the Home Economics building, some lectures being given at the Dairy Show. The conference was held under the supervision of Miss Lena Bumpas, who is in charge of county home demonstration work, and Miss Rhoda E. Dick of the Department of Agricultural Extension of Ohio State University. Miss Dick was acting as head of the urban demonstration work, but Miss Faith Lanman, former supervisor of home economics in Columbus schools, has now accepted the position for the coming year.

BUTTERMILK UTILIZED FOR CHEESE

Thru a new centrifugal process of recovery much of the buttermilk produced in the commercial creameries may be made into soft cheese, as determined thru investigations made by the department of dairying at the Ohio Experiment Station. Because the simple methods of converting skimmilk into cottage cheese do not work well with creamery buttermilk and are not adapted to large scale operations, many thousands of pounds of potential soft cheese, nearly equal in food value to meat, have been run into sewers daily by large creameries. With the new process the soft cheese may be recovered.

Under creamery conditions, with a 12-gallon capacity machine, from 350 to 400 gallons of buttermilk may be run thru the centrifuge daily. The yield from a gallon of buttermilk is about one pound of cheese curd. The cheese may also be mixed and salted in the machine; it is then ready to be sold directly as plain cottage cheese. Unlike the buttermilk, the cheese is sufficiently concentrated so that it may be shipped or stored economically.

(Continued from page 231.)

his aid in a reconstruction hospital; Professor P. H. Elwood, who is now captain in the artillery; Mr. B. D. Drain, assistant instructor in horticulture, and Mr. F. H. Beach, extension pomologist who are both in Officers' Training Camps; while Professor Montgomery expects to leave for France to take up Red Cross garden work.

In these few words we have very inadequately expressed what horticulturists have done and what Professor Wendell Paddock, head of the Department of Horticulture, has meant to the boys. It was he who founded this excellent idea of sending letters and who carried this service to its success.

The good done to our boys in thus linking them to home and their best associations, cannot be estimated. Certain it is that they were better mentally and morally because of these letters and hence able to serve our country so much the better.

Many of our boys will be at work for years to come on the great problems of the reconstruction period, and it is earnestly hoped that the sending of these letters may be continued. They will form a connecting link between the former students of the University and their Alma Mater, which will be strengthened as time goes on.

LETTERS FROM OVER THERE

(Continued from page 245.)

my opened on us with machine guns, and they had an excellent position on the hill behind us. We spent the rest of the day roaming around the hill, being followed by artillery fire all the time. In the evening parts of two companies took up a position on the hill, bayonets fixed and shining in the sunset. The brush on the hill was four or five feet high, and we think the glistening of the bayonets put a damper on the enemy. They moved machine guns around a bit, but did not do very much damage. When we opened fire on them it sounded like a couple of regiments instead of a couple of hundred men. We were without orders and had no connection or communication with any one. We held them all night, and in the morning a messenger brought us orders to rejoin our company, which we did. We did not get anything to eat because the Germans started shelling us and we were in dugouts for the rest of the day. That evening a French company pulled into town, and came to our shelter, which was in an old wine cellar. They had their kitchen with them and gave us a feed of chocolate rice pudding which was the best thing I had tasted for many a day. It was several days before I got so I could eat very much. We had been living on one meal a day, eaten at 3:30 in the morning, for eight days, and then went Sunday, Monday and part of Tuesday without eating. We got a couple of days' rest and were sent right back to reconnoiter our old position, which we did without anything happening.

"Then we went across the river with the information that we would not meet with resistance, but had just reached the top of the hill, in an open field, when they opened up on us. We were there all night and the next day, and were relieved the following night. Artillery, one-pounders and machine guns galore held us there. A few days later we advanced again and were soon up to the other big river (Note: Presumably the Aisne), where we went thru a heavy barrage in broad daylight. Our regiment has received all sorts of citations from French and American generals. They tell us if our battalion had not held, the Germans would be in France's big city now. There was no one behind us, so it is lucky we held. We are called the 'Rock-of-the———Regiment' (Note: Probably Rock-of-the-Marne) by the French. We have three hundred dollars raised in our company towards the regimental fund to erect a monument on the battlefield in commemoration of the men who fell or were wounded there.

"A few days the Y. M. C. A. pioneer organization came up to a certain wood where we were staying and gave us a vaudeville entertainment. Margaret Mayo, Lois Meredith and Elizabeth Price were the actresses, and there were also two men in the sketch. Our bands do not act as litter bearers now, but stay back at regimental headquarters, so they can give us music every night.

"During the last month I have not spent more than ten or fifteen francs, the main reason being that there was no way to spend it. I have not learned to speak French. We have been in French villages, but the day is spent in training, and in the evening we stroll around a bit. I started to study French when I came over, but it did not last long. If I were back in the Q .M. I would be able to speak it fluently by this time, but a doughboy does not have much time to study French. The weather conditions here are not very favorable these days, but grumbling is not in our manual so we keep on going."

THE SPRAY GUN

The spray gun, a short, pipe-like apparatus used in connection with a power-driven spray pump has been adopted by many orchardmen in southern Ohio during the past year. The device is regarded as superior to other mechanical means of throwing the sprays into trees, as it can be regulated easily by the operator to cover a variety of requirements from a fine, wide spray for low trees into a high, driving mist for high trees.

The Ohio Experiment Station points out that it requires but one operator to spray a tree as compared with two men with the long-pole method to do the same amount of work. In addition, the gun makes it possible to force sprays more effectively thru trees.

The gun operates with a power-driven pump under a pressure of 175 pounds but uses no more of the spray material than any other spraying outfit. The new device has only been in use for two years, being introduced particularly to relieve acute labor situation in Ohio orchards last spring.

NEGLECTED CLOVER CROP VALUABLE FOR FARMERS

That Ohio farmers have not reaped the possible benefits from growing clover in the crop rotation is shown by the fact that only one acre of this legume is being grown to every nine acres of corn, oats, wheat and timothy, according to the crop statistics from 1907 to 1916. Nitrogen is added to the soil more easily and more cheaply by growing clover than by any other method of fertilization.

The value of clover alone to add nitrogen to the soil would justify its use in the crop rotation as found by tests at the Ohio Experiment Station. In addition, clover is a protein feed which makes it valuable for feeding livestock. Yields of crops have been maintained at the Ohio station for 25 years by growing clover in the rotation, and adding only acid phosphate and muriate of potash as the other fertilizing compounds. The nitrogen content of the crops removed during the 25-year period is estimated to be 1,100 pounds. This amount, together with the nitrogen lost in the drainage water, can only be accounted for by the nitrogen-fixation process going on in the soil when clover is grown.

Winter Courses In Agriculture

AT THE COLLEGE OF AGRICULTURE,
OHIO STATE UNIVERSITY

January 6 to February 28, 1919

COURSES:

- Breeding Livestock
- Feeding Livestock
- Breeds of Livestock and Stock Judging
- Farm Crops and Grain Judging
- Farm Dairying
- Farm Horticulture
- Farm Management
- Farm Mechanics
- Farm Poultry
- Floriculture
- Gardening
- Soil Fertility
- Veterinary Medicine

These are practical courses for the busy farmer. If you can not come for a longer course, why not spend eight weeks at the College this winter?

Farmers' Week

January 27 to 31, 1919

For further information in regard to the Winter Courses or other courses offered in the College of Agriculture address

DEAN OF THE COLLEGE OF AGRICULTURE,
The Ohio State University,
Columbus, Ohio.

2 to 1

Advantage in buying a

DE LAVAL

NOW

BUTTER-FAT is now worth twice as much as it was two or three years ago.

So is labor.

A De Laval saves both.

And never before was there so urgent reason for saving every ounce of butter-fat and every half-hour of time and labor.

A De Laval will now pay for itself in half the time, compared with former years.

Buy it now and it will save its cost in a few months.

See the nearest De Laval agent right away and let him show you what the De Laval will save for you. If you do not know the De Laval agent, write direct for any desired information.

The De Laval Separator Company

New York
165 Broadway

Chicago
29 E. Madison St.